

URBAN REDEVELOPMENT FOR A HIGH POPULATION DENSITY
RESIDENTIAL COMMUNITY:
TRANSFORMING AN OLD NEIGHBORHOOD IN ZHONGSHANMEN DISTRICT
OF TIANJIN, CHINA

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ABSTRACT

CREATIVE PROJECT: Urban Redevelopment for A High Population Density

Residential Community: Transforming An Old Neighborhood in Zhongshanmen District
of Tianjin, China

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This creative project applies learned strategies to solve some community issues of a rapidly developing country through an urban design concept based on local conditions. The concept addresses two urban features of China--air pollution and high population density--to explore strategies for redeveloping Zhongshanmen District, a typical old residential area, into livable “green” communities.

The project begins by using literature review and case study to identify best practice urban planning strategies. Three case studies provide different perspectives. South Waterfront EcoDistrict (Portland, Oregon) provides effective reference for using sustainable building materials, balancing residential and green areas, and reducing energy waste. Caoyang New Village (Shanghai, China) reviews a successful large-scale redevelopment project. Italian Style Area (Tianjin, China) reviews a problematic large-scale redevelopment with analysis of reasons for its failure.

This creative project paper concludes with recommendations to redevelop Zhongshanmen District through transportation, open space and sustainable development.

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Chapter 1. Introduction

1.0 INTRODUCTION

1.1 Background

Since the beginning of reform and opening up of China in 1979, most cities have been enthusiastic about urban redevelopment. Over recent decades, many old communities have been demolished and redeveloped to create good scenery. However, this massive urban renewal brings irreparable damage to cities (Hedong Government, n.d.). Ignoring the characteristics of the old town, dismantling old communities and rebuilding new ones is the easiest method of urban construction, but blind demolition erases unique neighborhood identities.

Urban redevelopment is an important way to improve living environments. Good urban redevelopment is a complicated process with rational design that can improve the city function, complete infrastructure and expand public service facilities. This creative project reconstructs Zhongshanmen District, a typical old residential area in Tianjin, China, through transportation, open space and sustainable development.

1.2 Significance of the Creative Project

With rapid urban development and migrating populations, major cities are facing problems with uneven living environments. In some large cities in developing countries, a huge number of new high-grade residential neighborhoods are being established and advertised. The prosperous surface and beautiful living environment make people ignore the poor living conditions of residents in old neighborhoods, especially the growing populations of seniors. As a result, many old low-income communities are facing serious problems, such as congested roads, imperfect greening, and sub-standard residential buildings. Carefully planned urban redevelopment can improve the overall social

conditions and quality of life for all residents. To safeguard residents' interests and ensure social stability, the imbalance of housing quality caused by increasing development must be settled as soon as possible. China is a typical country whose economy has been rapidly expanding over the past decades. This creative project designs an urban redevelopment plan to reconstruct and repair an old traditional community in Tianjin, China. This urban redevelopment project will provide a reference for all high population density Chinese communities.

1.3 Objective of the Creative Project

The purpose of this study is to redesign transportation, land use, open space and landscape to make this area more suitable for living, based on traditional Chinese residents' culture. The redeveloped district will prove more caring and convenient for low-income residents, including seniors. Thus, this creative project can strengthen social stability and safeguard social public interests to maintain social equality. It also could provide a planning strategy to solve the relevant issues in some major Chinese cities.

1.4 Research Aims

The aim of this creative project is to review strategies for designing socially and environmentally sustainable communities.

1.5 Research Questions

This creative project seeks a better plan to redevelop an old residential district. It focuses on land use, transportation, open space and sustainable design, plus researches the local culture and strategies to maintain the local residents' lifestyles.

Three research questions guide this project:

- Question 1: How can urban design strategies help growing cities maintain

their cultural identity while also promoting economic vitality?

- Question 2: How can urban design strategies produce neighborhoods that are environmentally sustainable?
- Question 3: How can public and private partners implement environmentally and culturally sustainable district plans?

1.6 Research Methods

Research for this creative project comes from literature review and three cases studies. The literature review collects multiple theories from China and the United States. The main sources are academic journals, books and government documents.

The two Chinese cases show the relative success and failure of famous urban redevelopment projects in Shanghai and Tianjin. The U.S. case study provides an advanced idea about the community sustainability. The Thailand case describes their methods redeveloping an old community. This project will explore transportation, open space and sustainability from these examples, and identify different ways to plan urban redevelopment.

1.7 Outline of Creative Project

Chapter 1: Introduction

This chapter introduces the background of urban redevelopment in Tianjin, China. It describes the urban redevelopment conditions of different stages within the city site plan. It also analyzes the cultural implications, living habits and historical origins of three criteria: streets, spaces, and sustainability. Based on this background, the significance and objectives of this creative project provide one aim, three research questions and research methods. The introduction chapter provides a general description and background

analysis as a foundation for the whole creative project.

Chapter 2: Literature Review

This chapter shows the theoretical framework. It focuses on three research questions:

- How can urban design strategies help growing cities maintain their cultural identity while also promoting economic vitality?
- How can urban design strategies produce neighborhoods that are environmentally sustainable?
- How can public and private partners implement environmentally and culturally sustainable district plans?

Each research question has an introduction to describe the background, and to choose the research problem. The literature review discusses five sources for each research question. All the sources will have a simple conclusion and be analyzed in the summary.

Chapter 3: Case Study

Case study analysis of three urban redevelopment projects from eastern and western countries will identify progressive ideas from the successful cases and draw lessons from the failures. Every case emphasizes different urban redevelopment aspects.

Chapter 4: Creative Project Description

This chapter introduces the site background.

Chapter 5: Site Design

This chapter provides an urban redevelopment design plan for Zhongshanmen District in Tianjin, China. It provides drawings and discussions focused on redeveloping

transportation, open space, and sustainability.

Chapter 6: Conclusion

This chapter reviews the above work and presents a conclusion for this creative project. Lessons learned, recommendations and future research sections suggest short-term and long-term strategies, plus future research trends.

1.8 Urban Redevelopment in Tianjin, China



Figure 1. 1 Location of Tianjin (Beijing government, 2008) Figure 1.2 Map of Tianjin (Tianjin government, n.d.)

Tianjin means the “King’s port,” and the city was developed by shipping. Tianjin was colonized by eight countries, so it mixes east and west building styles. The direction of streets is affected by the Haihe River, so they are not straight. Today, as one of the four directly controlled municipalities, Tianjin is a metropolitan city in the north of the People's Republic of China. The population of Tianjin is 14.5 million. The main economic drivers are industry, agriculture, finance, business and foreign trade export (Hedong Government, n.d.).

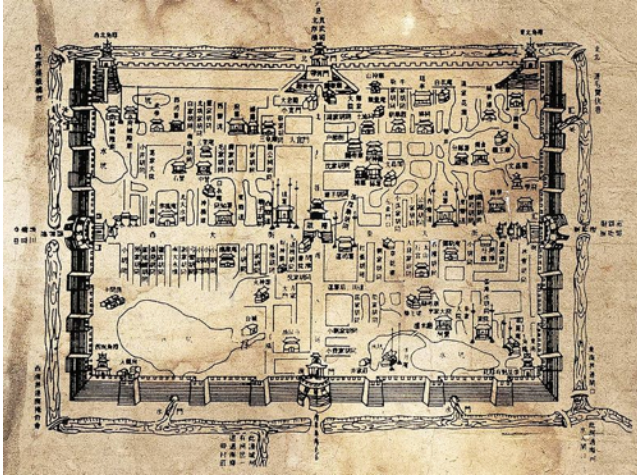


Figure 1.3 Tianjin Urban Plan in 1899

(Tianjin government, 1899)



Figure 1.4 Tianjin Urban Plan in Colony Period

(Tianjin government, 1930)

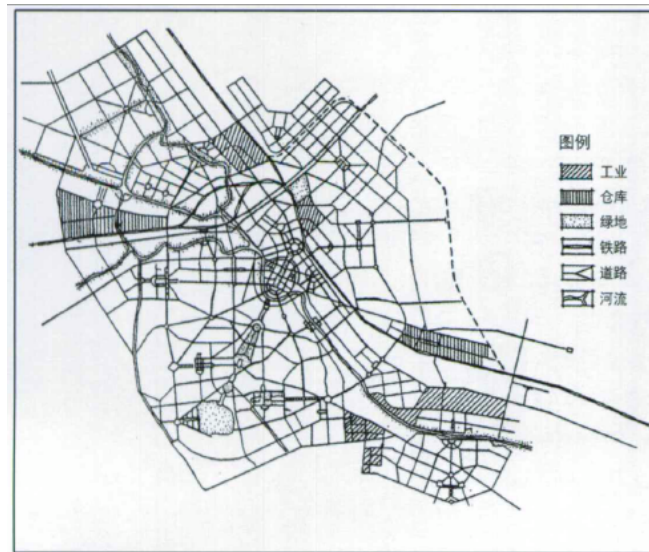


Figure 1.5 Tianjin Urban Plan in 1954 (Tianjin government, 1954)

Tianjin was founded in 1404, and through its six centuries of history, the city's development has experienced problems of expansion. Over the last three decades, the city has undergone multiple stages of major redevelopment (Ren& Guo, 2009):

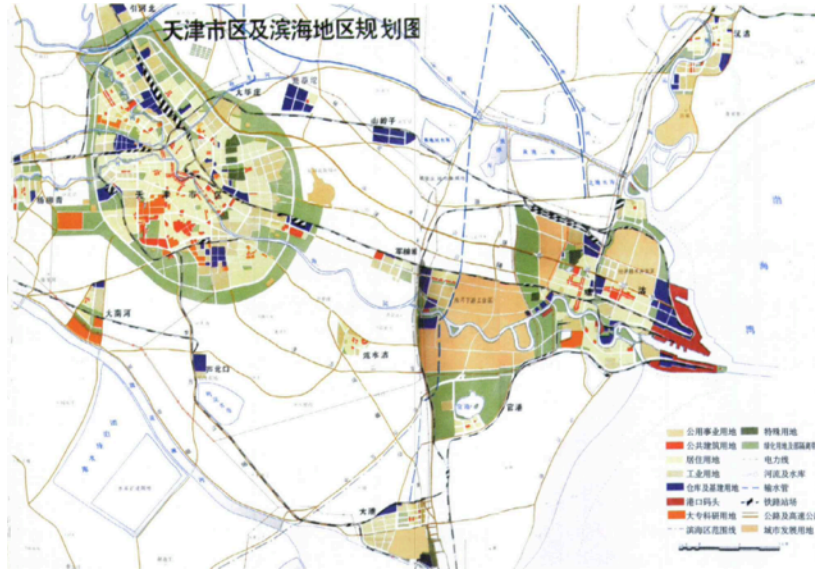
Early stage (1980-1993)

Figure 1.6 Tianjin Urban Plan in 1986 (Tianjin government, 1986)

During the early 1980s, Tianjin underwent a period of restoration and reconstruction after the Tangshan Earthquake. With the help of the State construction committee, Tianjin produced the most complete city master plan in 1981, defining the strategy for the center city and coastal areas. Moreover, in this period, the Tianjin government increased the urban infrastructure construction investment for transportation, and constructed 10 large Workers New Village residential areas to improve housing conditions for 500,000 residents. The creative project site is one of these areas called Zhongshanmen District (Ren & Guo, 2009).

Replacing substandard housings (1994-2002)

Figure 1.7 Tianjin Urban Plan in 1996 (Tianjin government, 1996)

In 1994, the Tianjin government put forward guidelines named “一路带危改，以危改促城市更新,” which means “promote city development by renovating dangerous old houses.” These guidelines focused on promoting urban renewal and reconstruction through widening city roads. During this period, many large old communities, such as the Zhongshanmen District, were pulled down. Replacing dangerous old houses accelerated the adjustment of the structure and layout of urban land, and improved the process of urban renewal and reconstruction in Tianjin. This project was hugely successful. It improved the building volume rate, resulting in denser, more efficient land use. It also expanded the lands for primary and middle schools, green spaces and roads. Through land replacement, some factories with serious pollution moved to outskirts, driving the industry chain formation and reducing industrial support costs (Ren & Guo, 2009).

Innovation and redevelopment (2003-2005)

In 2003, the government formulated "the measures for the administration of paid use of state-owned land," and sold lands as residential, commercial, tourist and entertainment areas by bid invitation, auction or listing. The government gained money from land use rights, and it also provided reliable guarantee funds for urban renewal and reconstruction. The government created the "government guidance, enterprise operation" mode of infrastructure. Then the city began redeveloping old buildings in the center of Tianjin (Ren& Guo, 2009).

Strategic upgrade stage (post-2006)

Figure 1.8 Zoning of Tianjin in 2011(Beijing government, n.d.) Figure 1.9 Night View of Tianjin
(America space agency, 2011)

On July 27, 2006, the state council approved the Tianjin city master plan (2006-2020). It also defined the new city positioning: "Tianjin is the economic center of the Huanbohai Region. It will strive to construct as an international port city, the economic center and ecological city in the north of China." During this period, the function of the city center has been improved. The main projects include improving the infrastructure

construction, building a subway system, designing the urban expressway system engineering, redeveloping the old communities and arranging the local residents to new living areas, building large public green spaces; comprehensively renovating the main streets, repurposing old workshops and warehouses into creative industries, strengthening, protecting and repairing historic buildings (Ren & Guo, 2009).

Based on the different stages and strategies of urban redevelopment in Tianjin, the following literature sources will show urban planners' explorations during different periods.

1.9 Streets— Traditional Social Interaction for Chinese People

Streets have special meaning in China besides their basic functions; they also provide spaces for social interactions. In ancient China, the government disseminated official information to people on the streets. This function spread official government messages and to spread public or implicit social messages between residents. Examples include leading a criminal through the streets to warn the public, celebrating religious activities, praying for rain, and announcing imperial edicts (Lishi, n.d.).

During the planned economy era (1953-1980), the government distributed houses to residents, so the living and economic conditions for each Chinese family were similar. During this period, the housing style was small connecting bungalows with shared public restrooms. With small rooms and more children in each family, there was not enough space to stay indoors, so they had to communicate between neighbors in public toilets, kitchens and alleys.



Figure 1.10 Old Housing Style in China (Chen, 2003) Figure 1.11 Old Housing Style in China (Chen, 2003)

Concession stands are another cultural characteristic of these traditional neighborhoods. Chinese residents like to eat outside on the streets and sidewalks, especially at night. Concession stands have a cultural and social position in Chinese residents' hearts. Compared with formal restaurants, concession stands are closer to residents' lifestyle, and offer cheaper prices and delicious food. They also provide a livelihood for many low-income residents. However, concession stands impede smooth transportation, so city management keeps driving them away.

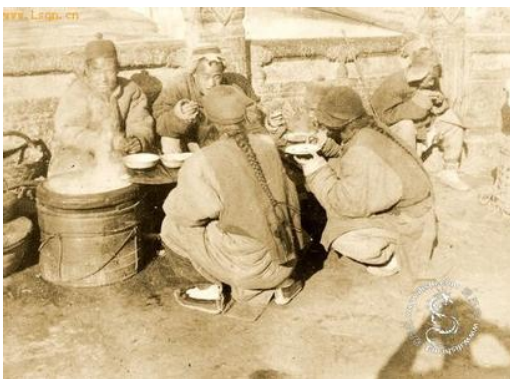


Figure 1.12 Concession Stands in Ancient China

(Lishi, n.d.)



Figure 1.13 Concession Stands in China today

(Wu, 2013)

1.10 Space— Urban Public Space Affected by *Zhouli* in Ancient China

Zhouli, a classic Confucian book written during Xizhou Dynasty (1046 -771 BC), has been the largest influence on ancient Chinese urban form. It stipulates the layout of the country and provides specific sizes for streets. During Sui Dynasty and Tang Dynasty, street hierarchy reflected the level and control status of the ruling class. City roads mainly served emperors and armies. There was no “real public space” in the city. At that time, the development of public space was completely controlled by the ruling class (Sun, 2012).

During the late Tang Dynasty, street markets were the main form of public space. Citizens did business along both sides, so streets began to flourish (Sun, 2012). Today, with growing emphasis on automobiles, conflicts arise between traditional market streets and vehicular traffic. This poses a challenge for urban designers.

1.11 Sustainability—The Traditional Concept of “Correspondence Between Human and Nature”

Feng shui and the theory of Nature-Human Integration were two important sustainability concepts in ancient China. The definition of Feng shui is “a Chinese philosophical system of harmonizing the human existence with the surrounding environment. The term... literally translates as ‘wind-water’ in English” (Feng shui, 2013). Actually, there are many more names for Feng shui, such as Yin-yang and Tu-zhai. Yin-yang means two opposing principles in nature, and Tu-zhai means the picture of a house. From these two names, it is easier to understand that Feng shui is a geographical situation of housing, considering such things as the direction of mountains and rivers. Feng shui is a pursuit of the ideal environment focusing on timing, location and people.

In other words, Feng shui is a synthesis of social and natural environment. In ancient times, Feng shui was arguably the most important condition before building a large structure, such as a tomb or palace. The theory of Nature-Human Integration is a basic attitude about how to treat nature. The ancient Chinese agreed that nature has no feeling and will not hurt people; instead, how people treat nature will determine how it treats them.



Figure 1.14 Bamboo Houses in Yunnan (Sina, 2009)

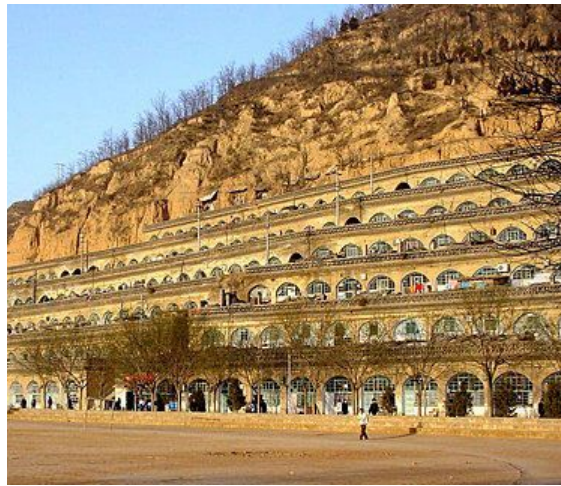


Figure 1.15 Cave Dwellings in the Loess
Plateau (Yifang, 2008)

Following the principles of Fengshui and Nature-Human Integration, Chinese traditional buildings fully embody the principles of sustainable development through building materials and site selection. The best orientation direction is North-South. Traditional Chinese buildings also pay attention to saving energy. The two typical building styles, combine these points: Dai Race's bamboo houses in Yunnan and cave dwellings in The Loess Plateau (See Figures 1.14 and 1.15). Bamboo houses use multiple eaves to keep out sunshine and use overhead first floor to improve ventilation and reduce

building footprints. In the Loess Plateau, Chinese residents create houses by digging holes in the hillside. Cave dwellings are a reasonable use of local materials and keep warm in winter but cool in summer. Today, urban designers can use similar strategies to build sustainable housings.

Chapter 2. Literature Review

2.0 LITERATURE REVIEW

2.1 Introduction

The following literature review surveys primary and secondary sources to explore the three research questions.

2.2 How Can Urban Design Strategies Help Growing Cities Maintain Their Cultural Identity While Also Promoting Economic Vitality?

2.2.1 Introduction

Historical Districts are important culture resources, which reflect cities' characteristics and local residents' lifestyles. Maintaining cultural identity while also promoting economic vitality is a challenge for urban redevelopment. To improve local vitality and attract people, planners experiment with combinations of business and culture, creating local commodity retail areas, external leisure spaces and dining areas. Rivers are also special elements as public spaces, which could host public activities and promote local districts' popularity. Different cities have different situations, so urban designers should use different strategies to create these spaces. In some high population density communities with many low-income residents, such as Zhongshanmen District, small businesses are more suitable for local residents, and provide more job opportunities to improve economic vitality.

2.2.2 Literature Review

For historic communities, each building, even each tree, sparks senior residents' memories. During the urban redevelopment period in China, many valuable historical communities were blindly torn down. During the 1980s, Liangyong Wu participated in an urban redevelopment for a traditional housing style community in Beijing by using his

“Urban Organic Renewal” concept, which focused on improving local residents’ living environment based on maintaining the organic community style. In the urban redevelopment project, Wu paid attention to three principles:

- Keeping good quality historical buildings, and tearing down those beyond repair
- Keeping the traditional road system
- Combining modern and traditional housing modes (Wu, 1994)

Liangyong Wu’s “Urban Organic Renewal” concept introduced a new design strategy for Chinese urban designers. Since ancient times, streets have had traffic functions, but also communication functions in Chinese hearts. Therefore, to maintain cultural identity, urban planners should focus on street design. In 2003, Michael Southwarth and Eran Ben-Joseph further developed the modes, and proposed the design criteria in *Streets and the Shaping of Towns and Cities* (2003):

- Supporting multiple purposes of residential streets, including entertainment for children and adults
- Designing the streets to ensure residents’ security
- Providing an interesting walking network
- Providing convenient streets for residents
- Distinguishing streets by different functions
- Associating transportation needs with natural and historical sites
- Minimizing the street area

Based on the above general concept, Hong Kong has implemented a series of pedestrian environment improvement plans since 2000 and promoted economic vitality at

the same time. These plans include:

- Pedestrian-only streets: Prioritize pedestrians and only allow emergency service vehicles to pass.
- Pedestrian-only streets at scheduled times: Permit vehicles only during scheduled times, but no on-street parking.
- Leisurely streets: Widen pedestrian streets and reduce parking space. Reduce traffic flow with narrow streets and deceleration platforms.

The plans also consider design characteristics of stores and landscape to attract people and promote economic vitality (Hong Kong, 2000). Cities in mainland China have used other strategies.

Shanghai's Tianzifang redevelopment project is the earliest creative industries gathering area in China. Tianzifang is a complete historical community with many traditional Shanghai-style buildings. Designers maintained local residents' traditional lifestyle and added creative industries, such as art studios, art centers, and art museums. Each year 2 million visitors come to Tianzifang, bringing huge economic benefits for this old community (Peng, 2009). The main designer of Shanghai Tianzifang redevelopment project said, the charm of creative industries is "Manufacturers get rent, government gets taxes, residents get jobs, the economy gets development, residents get benefits, the environment gets improvements, and aesthetics gets promoted" (Cited in Wu, 2009).

Kuanzhaixiang community redevelopment project is another famous example of improving economic vitality in Chengdu, China. Redevelopment changed some old living areas to business and entertainment functions, in combination with tea culture, mahjong culture and food culture to improve real estate values and generate more economic

benefits (Song & Zhou, 2011).

2.2.3 Summary

Michael Southwarth and Eran Ben-Joseph provide a basic strategy for street design. Combined with Chinese local conditions, Liangyong Wu put forward unique design concepts and successfully implemented them. Tianzifang and Kuanzhaixiang used culture and creativity to promote local economic benefits. The project site in Zhongshanmen District is a historical community without obvious traditional building styles, but it still can learn lessons from the previous two cases about developing cultural businesses and maintaining historical buildings. Hong Kong's pedestrian environment improvement plan is a significant reference to design the streets, because traffic congestion causes big problems in Zhongshanmen District.

2.3 How Can Urban Design Strategies Produce Neighborhoods that are Environmentally Sustainable?

2.3.1 Introduction

This section of the literature review explores sources that discuss sustainable design strategies that might be appropriate for the project site in Tianjin.

2.3.2 Literature Review

Environmental sustainability focuses on three parts: transportation, water and energy. Urban street space is an essential part of residents' living space. Dealing with the relationship between pedestrians, traffic and streets is an important aspect of urban redevelopment. In 1980, New Urbanism put forward two development models: TOD and TND. TOD is a transit-oriented development mode, which focuses on public transportation. The goal of TOD is to reduce residents' psychological dependence on private cars, avoid urban sprawl, decrease traffic congestion and expand housing choices. TND is a traditional neighborhood development mode, which focuses on network structure in neighborhoods (Platre, 1989).

Hans Monderman's concept of shared streets (1991) supports TOD. The goal is to minimize demarcations between traffic and pedestrians. Moreover, the concept of complete streets emphasizes safe travel, which allows bicycling, driving automobiles, taking public transportation and walking along the same street.

Today, China's large-scale urban renewal projects have been making great achievements, but some blind redevelopment has ignored the historical style and local residents' customs. Different cities have been using similar planning approaches without considering local culture situations. In *The Next American Metropolis: Ecology,*

Community, and the American Dream (1993), Peter Calthorpe, the founder of “New Urbanism,” put forward the following suggestions about what communities should focus on:

- Improved walkability
- Small block size, better road network, convenient transit, non-motor vehicle lanes, green space and parks, and intensive public buildings
- Mixed-use development
- Intensive jobs, living, commercial and social services
- Reduced dependence on cars

While Calthorpe focuses on transportation, others address water and energy to improve sustainability. Chicago’s green alley program provides five techniques: “alley drainage improvement through proper alley,” “permeable pavement,” “high albedo pavement,” “recycled construction materials” and “dark sky compliant light fixtures.” *The Chicago Green Alley Handbook* (n.d.) explains how green alleys can save energy and water.

Effective use of space is another way to promote environmental sustainability. No matter how high the population density, there are always small gaps that are perfect for public space. Aiming at the lack of open space in cities with high-density buildings, Robert Zion proposed a concept about “vest pocket parks.” The key feature of pocket parks is their small area. The objective of parks is providing rest spaces for residents. The parks are like outside rooms with interesting pavement, walls with climbing plants and a refreshment kiosk. Parks also use waterscape to cover the city noise. Paley Park at 3East 53rd Street in Midtown Manhattan is a good example of a pocket park by Robert Zion

(Project for public spaces, n.d.).

2.3.3 Summary

Both New Urbanism and Shared Streets concepts emphasize people-oriented design and reduce car dependency. If Zhongshanmen District's urban redevelopment fund is enough, Chicago's green alley program is a helpful case to improve the alley and save energy. Zhongshanmen District can also efficiently use some small spaces to create vest pocket parks.

2.4 How Can Public and Private Partners Implement Environmentally and Culturally Sustainable District Plans?

2.4.1 Introduction

The People's Republic of China was founded in 1949. During the planned economy period, government controlled development. After 1978, China quickly transitioned into the market economy; but the government still controlled many businesses, while private companies were growing in number. Article 10 of "The Constitution of the People's Republic of China" in 1982 required that cities' lands belong to the country. The main finance source of government revenue is selling land use rights. State-owned investment fills and improves the nonprofit and low-profit urban function facilities, such as schools, hospitals, police stations, post offices, and parks. These are funded from local enterprises: income tax fees, landuse fees, infrastructure supporting fees, bank loans, donations, etc. Private investors, such as developers, obtain the landuse right (40 years or 70 years) through the policy and market competition. In accordance with government zoning requirements, developers work on demolition, renovation, construction projects, etc. Due to the rapid escalation of land prices, developers have seen huge gains in recent years (Hedong government, n.d.).

Zhongshanmen District is an industrial workers' living district in Tianjin. The total area of old bungalows is 350,000 square meters, housing nearly 60,000 residents. Because of its high population density, poor infrastructure, and high cost of demolition, redeveloping Zhongshanmen District will require huge investment and earn less profit, so fewer developers wanted to participate in the project. In 1995, Tianjin government and Hedong government reduced and exempted thirteen charge items to support the urban

redevelopment of Zhongshanmen District (Hedong government, n.d.).

2.4.2 Literature Review

Funding is a common issue during city infrastructure construction and maintenance, but PPP (public-private partnership) is a helpful financing strategy to solve this problem. PPP is a partnership between government and private businesses to provide public services or build public infrastructure, including water supply, hospitals, schools, transportation (subway, highway, airports, harbors) etc. (Calthorpe, 1995).

In 1993, to encourage foreign investment and improve urban redevelopment projects, Tianjin government published guidelines for *Preferential Provisions of Foreign Businesses Invest in Dilapidated Buildings* and waived guarantee deposits and cash deposits (Tianjin government, 2008).

City infrastructure is state monopoly in China. In 2005, Tianjin government published *Tianjin Municipal Administration Concession Operating Management Ordinances* providing guidelines to improve city facilities. The following items obtain special permission rights: city buses, taxis, subway, light rail, water supply, natural gas, heating, sewage treatment, garbage disposal and other items. Tianjin Chengtou Company followed these ordinances and modes to obtain 200 billion RMB credit and loan funding from banks to improve city infrastructure. This dramatically changed Tianjin's appearance (Chengtou Company short period financing report, 2006).

In 2008, to prepare for the Olympic Games and promote the environment in Tianjin, the deputy mayor published a report about distribution of different redevelopment missions for each department, including dismantling housing and relocating residents, reforming building elevations, developing lighting, improving parks

and green spaces, maintaining roads, relocating electric cables, unifying city furniture, fixing roofs and cleaning waste. For housing reconstruction, Tianjin government paid 60% and district governments paid 40%, but owners were responsible for reconditioning all other non-residential building types. Government paid for street construction from the city street redevelopment fund, and canceled some street fees (Tianjin government, 2008).

In addition, ABS (Asset-backed securitization) is one mode of PPP based on existing funds or future benefits, publishing bonds in capital markets to raise money. Chengtou Company used ABS to raise funds for improving streets and park conditions.

2.5 Summary

This literature review has addressed the three research questions and identified issues which will be explored in case studies.

- How can urban design strategies help growing cities maintain their cultural identity while also promoting economic vitality?

As cities grow, they must keep their existing population and culture to support local institutions, like Tianjin No. 45 High School and Zhongshanmen Park. With light rail, communities become popular, but planners must develop carefully to provide growth, but also protect the qualities that make the district desirable.

- How can urban design strategies produce neighborhoods that are environmentally sustainable?

Urban planning strategies like TOD, New Urbanism and PPP help cities develop, but also protect their culture by concentrating development with mixed-use and diverse street typologies.

- How can public and private partners implement environmentally and culturally sustainable district plans?

Many communities use public-private partnerships to implement strategies, but these vary between cultures. In China, the government often cancels fees to encourage private companies to invest in sustainable strategies, but for some larger-scale redevelopment projects, the government pays most of the costs.

Chapter 3 Case Studies

3.0 CASE STUDIES

3.1 Introduction

This chapter analyzes three cases exploring transportation, open space and sustainability: Caoyang New Village (Shanghai, China), the Italian Style Area (Tianjin, China) and South Waterfront EcoDistrict (Portland, Oregon, United States). The first two cases respectively focus on residential and economic redevelopment, and the third case focuses on sustainability.

Like Zhongshanmen District, Caoyang New Village is a Workers New Village in China. This is a successful case, especially regarding culture. Culturally, Caoyang New Village maintains and develops its original building styles and local culture, especially recreated old scenarios in the museum. In addition, Caoyang New Village's good landscape, attractive open space and beautiful environment are worth studying.

The Italian Style Area and Zhongshanmen District are located in the same city, so they have similar urban environments. This case developed the Italian Style Area from a residential area to an advanced commercial zone. However, during the Italian Style Area redevelopment project, planners tore down too much residential housing and displaced local residents. Many local residents are low-income people, and some had no place to live during and after this redevelopment project. Therefore, such large-scale urban renewal is not conducive to maintain the stability of social development, because it will damage low-income families. Zhongshanmen District redevelopment can learn lessons from the Italian Style Area.

China's urban redevelopment process has been rapid, so it is necessary to analyze some cases from other countries. Portland's South Waterfront EcoDistrict project is a

U.S. case. It provides advanced sustainability strategies for communities, especially for green alleys and PV roofs. In addition, its safe bicycle infrastructure is worth studying. Different countries have different lifestyles and population conditions. If sufficient funding is available, Zhongshanmen District can consider adopting U.S. community design strategies.

3.2 Caoyang New Village—Shanghai, China



Figure 3.1 Bird's Eye View of Caoyang New Village
(Tu, 2011)



Figure 3.2 Site Plan of Caoyang New Village
(Jin, n.d.)

3.2.1 Introduction

Workers New Villages were large residential areas built from 1949-1957, to solve the huge number of workers' living problems in industrial cities. These characteristic communities reflect the People's Republic of China's urban development process and have historical preservation value. During that period, most residential structures had good conditions, and reasonable community structure and neighborhood. However, their aesthetics and functions have become outdated, and have not adapted to urban renewal problems during the city transformation period. To avoid workers living in rush mat huts,

the Shanghai government decided to build Caoyang New Village for the workers in 1951 (Li, 2003).



Figure 3.3 Site Plan and Images of Caoyang New Village (The College of Architecture and Urban Planning in Tongji University, 2009)

Caoyang New Village is located in Putuo District of Shanghai, China. It is the first Workers New Village in Shanghai, but also the first in China. Putuo District was a historical industrial zone with high-density rough shanties, negative environment and incomplete facilities. The mayor Yi Chen established the policy "service for production, service for labors, service for workers first," and formed the labor residential construction committee. Sen Shao, one of the first workers to live in Caoyang New Village, described these two-story garden houses. Each story had three units that shared a bathroom and a kitchen. Flowers were planted in the foreyards and backyards, and the surrounding areas were paddy fields (Lu, 2011). After repeated reconstruction and expansion, Caoyang

New Village has become an important large residential area in western Shanghai. Many original residents still live in the community, so today there are many older residents.



Figure 3.4 Open Space in Huaxi Street (Zhou, 2011)



Figure 3.5 Lanxi Street Condition (Zhou, 2011)

3.2.2 Transportation Analysis

Caoyang New Village has convenient transportation, including many main streets of Putuo District, bus lines and rail transit. Among them, Lanxi Street is the most successful street in this area. It has characteristic paving, lush avenue trees, less traffic and beautiful landscape.

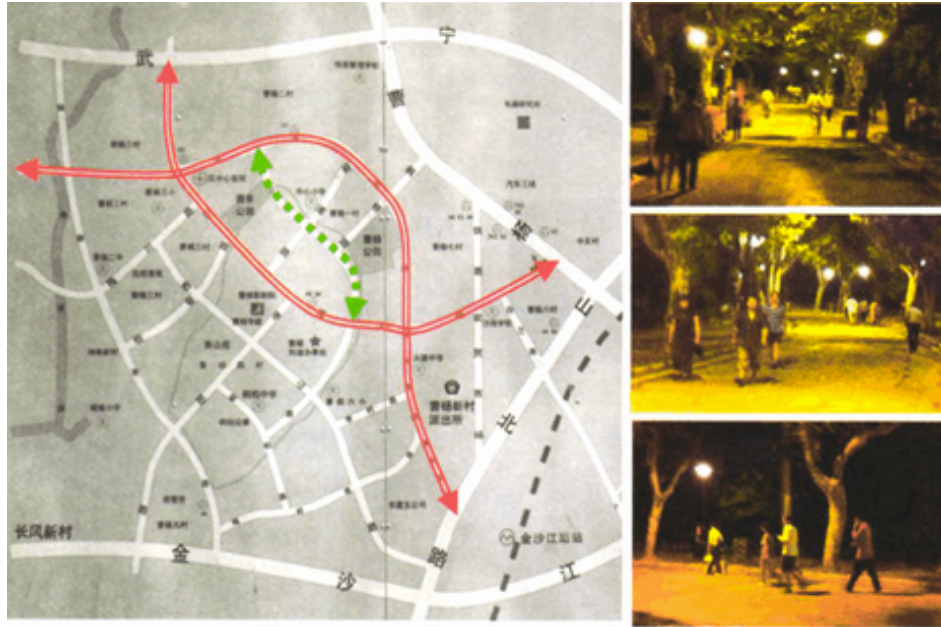


Figure 3.6 The Location of Huaxi Street (green line) and Its Public Activity in the Evening (Yuan, 2013)

In the evening, many local residents like walking or running along Huaxi Street, so its activity density is much higher than other streets. With less traffic and beautiful environment in the evening, local residents have used Huaxi Street as a jogging route for over 10 years. In the original plan, some parts of Huaxi Street are arcs. This design reduces traffic speed, but also keeps communities' integrity. In addition, the surrounding original three-story buildings have maintained their styles and good condition, plus the circular waterfront, so Huaxi Street is popular for its less traffic and good landscape (Yuan, 2013).

3.2.3 Open Space Analysis



Figure 3.7 Difference Between Initial Plan and Existing Conditions of Public Space (Yuan, 2013)

The original plan included two large public parks with passive recreation, plus other smaller green spaces. During the marketization period, Caoyang New Village underwent large-scale redevelopment based on the original plan. High-density residential buildings reduced the public space. Gated communities and high-rise buildings affect sunlight in open spaces and crowd the waterfront.

Reconstructing Caoyang New Village's public image

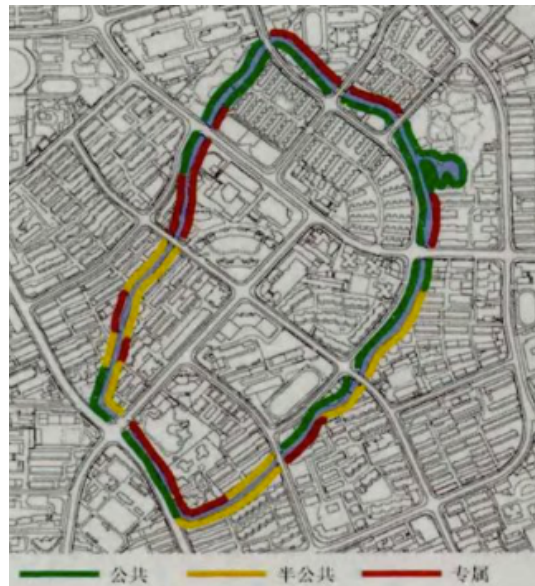
Today, high-rise buildings and large commercial facilities have transformed the traditional impression of Caoyang New Village. In the past, its landmarks were three-story residential buildings with white walls and red roofs, but new high-rise buildings distract attention away from the original houses. The Soviet Union Style buildings have gradually been neglected. In addition, the accumulation of large commercial facilities improves the community center, so that people focus on the commercial center, not the characteristic buildings.

Separation of public lives

In the original plan, workers were the main residents in Caoyang New Village. During recent decades of redevelopment, many gated communities with upscale high-rise buildings have been constructed. On one hand, these gated communities attracted younger adults with busy careers to live in this area. On the other hand, most of the original senior residents have enough free time to participate in community activities. Therefore, the new and original groups do not have too much overlap (Yuan, 2013).

Weak sunlight

Caoyang New Village's high-density, high-rise buildings reduce sunlight, shadowing surrounding buildings and open spaces. Moreover, many lush trees and gardens are located south of the traditional buildings, so the whole open space looks dark and has low usage rates.

Incomplete circular waterfront

Public Area Semi-public Area Private Area

Figure 3.8 Open Space Condition of Caoyang New Village (Yuan, 2013)

The interesting characteristic of Caoyang New Village is its circular waterfront. Some drainage systems go into communities, and become part of the residential landscape. Because of the large buildings and insufficient drainage systems, the waterfront space has become less attractive, and few people want to stay. Moreover, some public waterfront spaces are occupied and separated by gated communities and institutions. Although these private coastlines cover less than 30% of the waterfront, continuity has been lost, and some waterfront areas lack good function because of their small size and poor environment (Yuan, 2013).

A popular open space in Caoyang New Village is Caoyangyingcheng Square. It is located at the intersection between Lanxi Street and Zaoyang Street. It is in the community centre with many business facilities. The most popular activity in this square is roller-skating. Many kids have roller-skating class between 9:00 AM-19:30 PM. After 19:30 PM, neighborhood committees will organize dancing activities for older adults. People from other communities also like shopping, eating and watching movies in this area. Caoyangyingcheng Square provides different services and attracts many residents every day (Yuan, 2013).

3.2.4 Sustainability Analysis

In 2013, Caoyang New Village developed projects to improve and humanize design for seniors, celebrate history, preserve community culture, and purify the river system.

Humanize design for seniors

Caoyang New Village conducted barrier-free redevelopment, including installing stair handrails, bath seats, toilet armrests and other functions to improve seniors' safety.

Daily care service, dining rooms, activity rooms and gyms also enrich seniors' lives (Chen, 2013).

Develop Caoyang Cultural Center



Figure 3.9 Lanxi Convenience Store in Cultural Center
(Qiu, 2013)

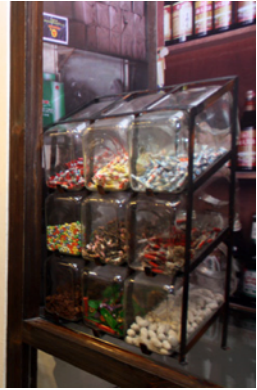


Figure 3.10 Old Furniture in Caoyang Museum
(Li, 2013)

In 2013, Caoyang Cultural Center opened, with Caoyang Museum, community library, visitors antechamber, etc. For Caoyang museum, designers used old goods and furniture to recreate scenes from past decades (See Figures 3.9 and 3.10). Among them, Lanxi convenience store attracted most residents. Many discontinued goods with historical brands reappear in the museum, recalling residents' memories (Chen, 2013).

Preserve cultural experience

Caoyang is the first Workers New Village to open its doors to the outside world in Shanghai. Over 60 years, Caoyang New Village has received 300,000 foreign visitors from more than 150 countries and regions. Living with local residents provides an interesting cultural experience. Guests can visit local residents' homes, taste homemade Shanghai cuisine, learn how to make dumplings, etc. These activities make tourism an important local industry (New residents Website, 2013).

3.2.5 Summary

Caoyang New Village has abundant community activities and a museum to commemorate this area's urban redevelopment process. Zhongshanmen District also owns a culture museum; however, it lacks more content and enough open hours. Therefore, building a new museum and organizing more culture activities for local seniors is necessary in Zhongshanmen District. In addition, Zhongshanmen District must retain its original buildings like Caoyang New Village, and avoid tearing down too much housing. According to Lanxi Street conditions in Caoyang New Village, Zhongshanmen District also must prohibit most on-street parking to keep roads unblocked and plant more street trees.

3.3 Italian Style Area—Tianjin, China



Figure 3.11 Night View of Italian Style Area
(Enorth, n.d.)

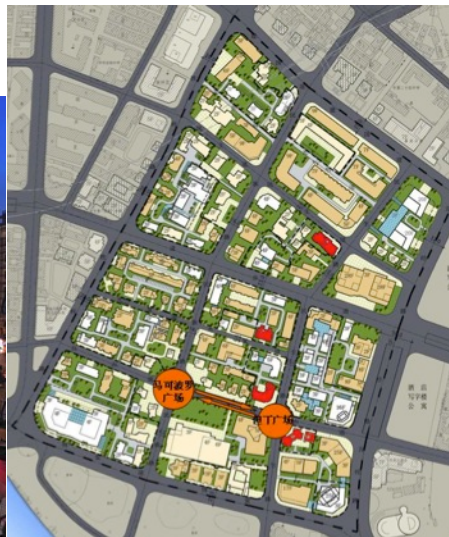


Figure 3.12 Site Plan of Italian Style Area
(South Beauty, n.d.)

3.3.1 Introduction

Tianjin concession was established along the Haihe River in 1860, and lasted into the early 20th century. Nine countries were involved in the concession: the United

Kingdom, France, USA, Germany, Japan, Russia, Italy, Austria and Belgium. Tianjin is a special city because it had the most concessions in China. After the Anti-Japan War in 1945, the Chinese government took back the Italian concession that was more than 40 million square meters of Tianjin. The Italian Style Area is located in the South of Tianjin's Hebei District, which was the only concession of Italy. In 1902, Italy nominated a lieutenant named Filete to be responsible for planning, with 104 western classical structures, including residential housing, consulate, city hall, municipal offices, barracks, schools, hospitals, churches, stadium, vegetable markets and other function buildings. It is the only historical Italian style area in Asia. Over half a century, aging overcrowded architecture led to negative living situations, so the Tianjin government decided to redevelop this district. Since 2003, the Italian Style Area has been redeveloped to a leisure and entertainment district for the citizens. It brings huge social and economic benefits for Tianjin (South beauty, n.d.).

3.3.2 Transportation Analysis



Figure 3.13 Street View in Italian Style Area(wo, 2012) Figure 3.14 Alley Condition in Italian Style Area (wo, 2012)

The main urban grid of the Italian Style Area is two squares and a chessboard road network. In its redevelopment plan, designers maintained the original block

structure, kept street scale, and restored street fences. Constructing an underground sewer network solved the problem of combined sewage diversion, increased the capacity of electric power, communications and gas pipelines, and added reclaimed water to improve the status of domestic water. During this period, the Tianjin government was responsible for infrastructure, communal facilities redevelopment and attracting investment. Italian Style Area is a low-density commercial district with a latticed transportation system, separating pedestrians from vehicles to reduce traffic congestion. This project uses pedestrian streets, vehicle traffic patterns and concentrated parking (South Beauty, n.d.). In addition, Italian Style Area launched small trackless train tour routes to save time and connect the landmark buildings (See Figure 3.16).

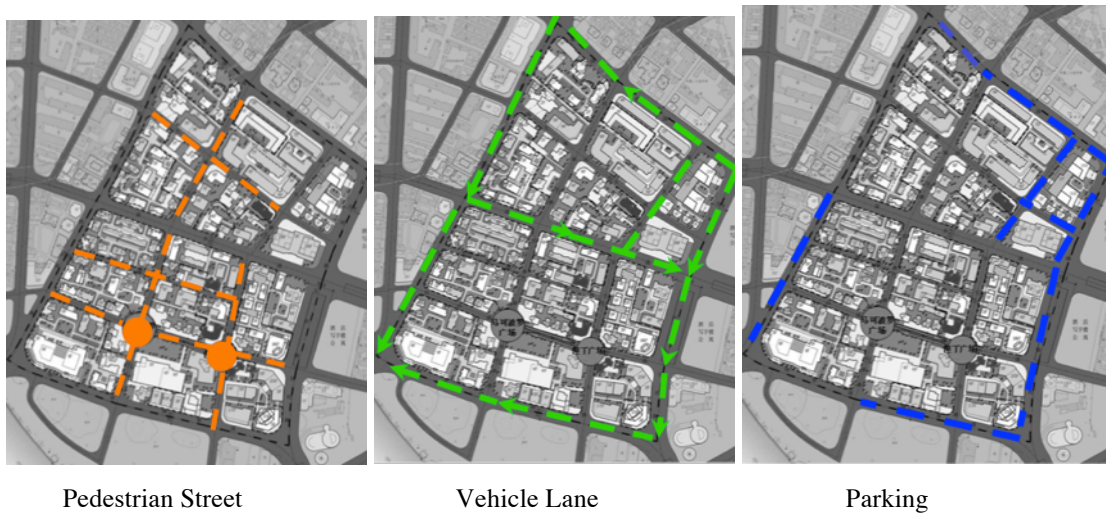


Figure 3.15 Different Street Typology (South Beauty, n.d.)

These comprehensive commercial streets attracted many international brands and powerful enterprises. This protective development pattern maintained the original Italian style, but also achieved good economic and social benefits through their catering, entertainment, leisure, tourism, culture, creativity and other functions. In 2012, the total

economic consumption was 850 million RMB, providing 3,000 jobs (Shi, 2003).



Figure 3.16 Photograph of Small Train (Tianjin Daily News, 2009)

3.3.3 Open Space Analysis



Figure 3.17 Location of Two Open Public Squares
(South Beauty, n.d.)



Figure 3.18 Marco Polo Square (Wo, 2012)

Planners improved the landscape condition of Marco Polo Square to create a symbolic open space (See Figures 3.17 and 3.18). All landscape details reference Rome, Florence, and Venice, using landscape systems, such as business logos, sunshades, awnings, flower boxes, and sculptures to create a traditional Italian-style area (See Figure 3.19). To promote the square commercially and create a pleasant leisure environment,

planners added wood paving around buildings as continuation of restaurant spaces. In addition, a multi-level night view lighting system with building eave lamps, landscape lamps and neon lights attracts people at night. Today, many movies and weddings are photographed in this beautiful open space.



Figure 3.19 Open Space in Italian Style Area (Wo, 2012)

3.3.4 Sustainability Analysis



Figure 3.20 Historical Buildings (Li, 2008)

During this redevelopment, planners removed some non-Italian elements and provisional buildings to maintain the whole harmonious and unified regional architecture. Most historical buildings in the Italian Style Area were dangerous for living, so restoring and maintaining original building style became a significant principle in this project (See

Figure 3.20). Building walls used Cyanogen Coagulation Waterproof Agent to prevent dampness and corrosion. Adiabatic aluminum windows and double hollow glass saved building energy. To keep the historical style, the new roof tiles replicated old surfaces. Some parts of outdoor corridors were covered by ground glass to maintain the historical paving (Wang, 2002).

3.3.5 Summary

The different street typologies in the Italian Style Area are worth studying, so Zhongshanmen district can limit cars during busy times for some congested streets. However, this case has some serious issues. Regarding design, land-use zoning has completely changed, and the establishment of many new high-rise buildings destroyed the original urban cultural atmosphere. Regarding funding, this huge reforming project costs too much, and almost makes the redevelopment plan a full-scale development project. Socially, many local residents dislike this project, because their original neighborhood lifestyle has been destroyed. Moreover, affordable housing options are limited, so many local residents must move to suburbs and rent small rooms.

Learning from the Italian Style Area's failures, Zhongshanmen District must avoid forcing vulnerable groups to relocate during city redevelopment progress. Focusing on small-scale community renewal will satisfy local residents, especially older adults' needs.

3.4 South Waterfront EcoDistrict Development— Portland, Oregon, USA

3.4.1 Introduction



Figure 3.21 South Waterfront EcoDistrict (South Waterfront EcoDistrict, 2013)

Portland Sustainability Institute is a group developing Eco Districts in Portland, Oregon. An EcoDistrict is “a new model of public-private partnership that provides an important scale to accelerate local sustainability outcomes—small enough to innovate quickly and big enough to have a meaningful impact to inform broader policy and community-wide investments”. Their value proposition for utilities is to make the grey area into green area through infrastructure, including saving funds, achieving watershed goals, improving placemaking, enhancing property values, and increasing local employment. Their value proposition for cities focuses on energy (Portland’s South Waterfront EcoDistrict, 2013).

South Waterfront Eco District Development along the Willamette River, is one of five pilot districts in Portland. The South Waterfront was a 153.5-acre industrial brownfield. Their objective is to redevelop this area as a vibrant urban neighborhood with more housing, jobs, entertainment, and multi-transportation opportunities; also, using the

riverfront area to build the natural landscape improves ecological functions (Portland's South Waterfront EcoDistrict, 2013).

3.4.2 Transportation Analysis

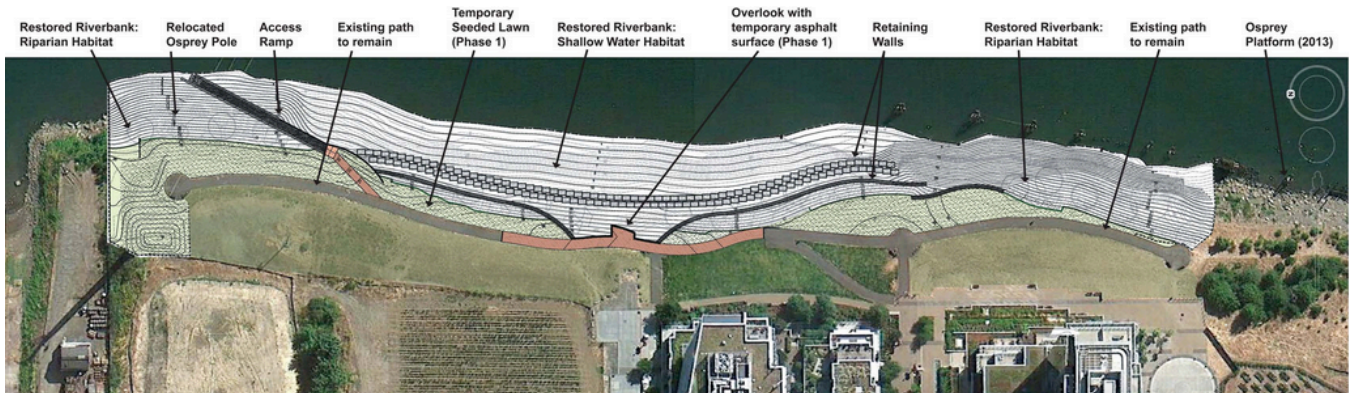


Figure 3.22 Site Plan of Greenway (South Waterfront EcoDistrict, 2013)

South Waterfront District provides different trip modes for local residents. An aerial tram connects South Waterfront and Marquam Hill, where a hospital, research labs, and medical schools are located. Two streetcar lines, buses and light rails effectively connect main districts. To encourage residents to commute to work by bicycles and avoid dodging cars, this district provides rental and repair bicycle services, connects a 40-mile bike loop and redevelops two safe on-street bike paths: SW Moody Ave/SW Bond Ave and South Waterfront Greenway. The redeveloped SW Moody Avenue becomes a main access point with three traffic lanes, dual streetcar tracks, pedestrian walkways and a bicycle lane. Gibbs Street Pedestrian Bridge and South Waterfront Greenway are two main pedestrian paths/trails in South Waterfront District. Residents can obtain pedestrian and bicycling information from PortlandSmartTrips. Portland has an integrated bicycle and pedestrian information system. The Pedestrian Master Plan collects citizen requests, street and accident GIS data and provides a logistical support for pedestrian systems. It

also records funding strategies and analyzes different scenarios about future pedestrian improvements. Portland Bureau of Transportation promotes walking for fitness, but also provides a walking experience for seniors. A non-profit advocacy organization named Oregon Walks encourages safe and convenient walking (Portland's South Waterfront EcoDistrict, 2013).

3.4.3 Open Space Analysis



Figure 3.23 South Waterfront Greenway (South Waterfront EcoDistrict, 2013)

Elizabeth Caruthers Park and South Waterfront Greenway are attractive public amenities in South Waterfront District. South Waterfront Dog Park, which is privately funded by volunteers, is a feature to increase interaction between dogs and their owners. The South Waterfront Community Garden is another beautiful amenity. The area also has smaller open spaces scattered throughout the community (Portland's South Waterfront EcoDistrict, 2013).

3.4.4 Sustainability Analysis

South Waterfront EcoDistrict provides different housing strategies to save energy.

Bioswales & Ecoroofs

Bioswales and Ecoroofs are This is a water cleansing strategy. Stormwater will be cleaned of particles and contaminants after passing through vegetation and gravel, and then filter into the ground or Willamette River. The South Waterfront project filters 90% of stormwater this way.

Solar Panels & Trombe Wall

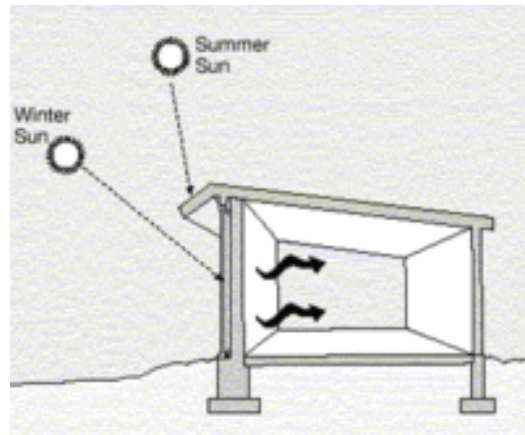
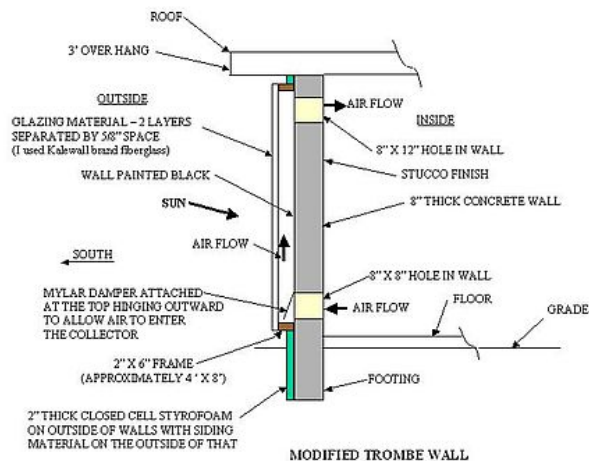


Figure 3.24 A Northern Hemisphere Trombe Wall

(Wiki, n.d.)

Figure 3.25 Passive Solar Design Using an Unvented

Trombe Wall and Summer Shading (Wiki, n.d.)

The new buildings in South Waterfront can produce more energy than they consume. The solar panels of those buildings can produce 60,000 kilowatts of electricity each year. Solar trombe walls can preheat hot water for buildings. The designers provided an example: “The 6,000 square foot trombe wall and solar panels save 36 tons of CO₂ emissions from entering the atmosphere each year. That is the equivalent of 407 cars every year” (South Waterfront community relations, n.d.).

Environmental Certification (LEED)

The U.S. Green Building Council defines “LEED (Leadership in Energy and Environmental Design) certification [as] the national standard for environmental building practices.” South Waterfront achieved effective results with this. Moreover, Portland’s newest neighborhood boasts many more LEED-certified residential towers than other neighborhoods (South Waterfront community relations, n.d.).

Sustainable Materials

South Waterfront District uses many sustainable building materials, such as using synthetics to replace wool carpets, and flooring materials made from sustainably harvested woods. These strategies are helpful for the local environment (Portland’s South Waterfront EcoDistrict, 2013).

3.4.5 Summary

South Waterfront EcoDistrict provides different types of open spaces, so Zhongshanmen District can design community parks and rent individual gardens in community open spaces. This case describes many technology strategies to save energy; however, considering material costs, these modes would have to be a long-term strategy for Zhongshanmen District.

3.5 Conclusion

Together, these three case studies provide valuable urban planning strategies that could be applied to Zhongshanmen District. The most useful strategies include preserving original neighborhood buildings as much as possible, creating more public open spaces, especially in neighborhoods, expanding the museum to celebrate district history, considering local residents’ needs, keeping existing land uses when possible, and avoiding high-rise residential buildings.

Chapter 4. Creative Project Description

4.0 CREATIVE PROJECT DESCRIPTION

4.1 Project Background

4.1.1 Redevelopment History of Zhongshanmen District

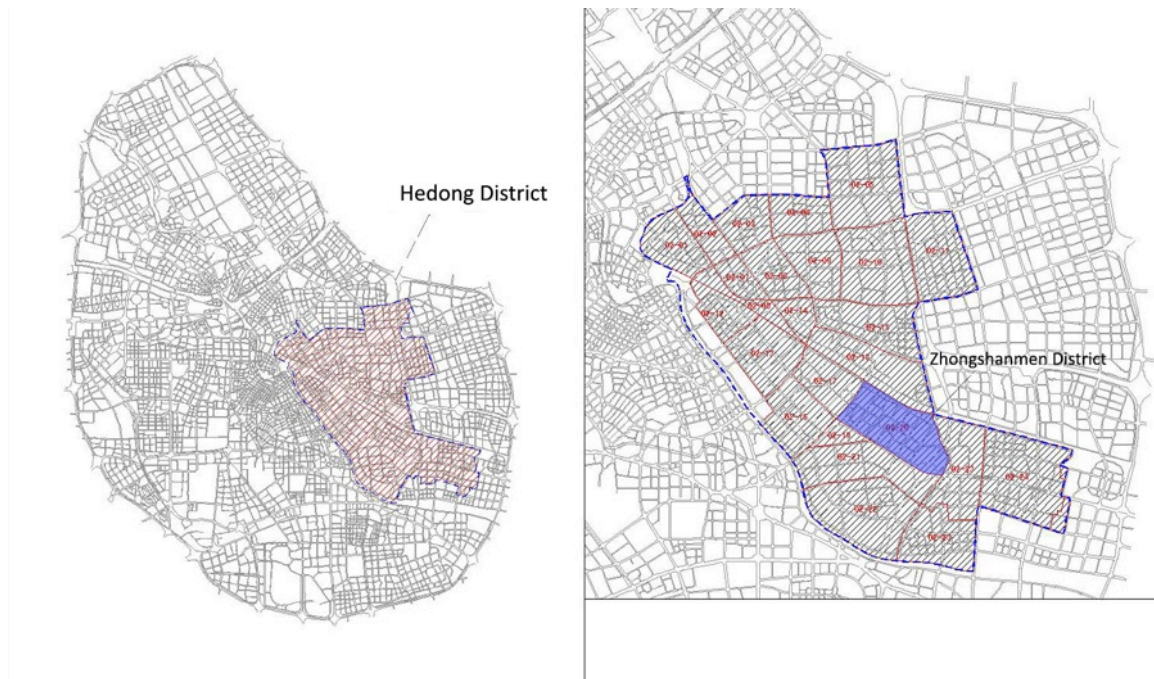


Figure 4.1 Locations of Hedong District and Zhongshanmen District

(Tianjin Urban Planning Information Center, 2012)

Hedong is one of Tianjin's six main districts. Zhongshanmen District is located in the southeast of Hedong. After the People's Republic of China was founded in 1949, the Tianjin government created seven Workers' New Villages in 1952 to solve housing shortage problems. The first and largest of these was Zhongshanmen Workers' New Village, which covers 2.33 Square kilometers. This development transformed Zhongshanmen District from a wasteland to a residential area. Workers from steel mills, cotton mills, bicycle factories, transportation departments and other employment sectors

moved into this area. However, the simple building structures had no heating or gas, and the living environment had no public activity space. After the Tangshan Earthquake in 1976, most housing in Zhongshanmen Workers' New Village required extensive repairs. In 1988, the Tianjin government redeveloped part of Zhongshanmen District by removing 1,287 units, and dismantling 24,327 square meters. The new housing style was brick buildings with frame structure. In 1993, the Tianjin government put forward a redevelopment goal to completely redevelop the main old housing in five to seven years. This goal significantly changed Zhongshanmen District. By 2004, most of the redevelopment projects had been completed, and mid-rise buildings with six to seven floors without elevators replaced old housing. After 2005, 28 to 32-floor high-rise buildings provided market-rate housing and more mid-rise affordable housing were also added (Hedong government, n.d.).

China's state-owned enterprises have been responsible for the country's industrialization, but the Planned Economic System reduced their market competitiveness and caused heavy losses. Therefore, many enterprises gradually left the market, and a large number of residents became unemployed, especially those who were older or lacking professional knowledge. During this period, Tianjin's industrial status gradually declined. Hedong became the least flourishing district, with the largest unemployment. Most original enterprises merged or collapsed, leaving no money for funding and maintaining worker housing. As younger and more affluent people moved away, Zhongshanmen District began to decay. Since 2008, Tianjin government has repaired the building facades, unified balconies and air conditioning style, renovated main streets' paving, added green spaces and parking, and made other changes to improve local

residents' living environment. Today, many retail businesses and social services thrive in this district (Hedong government, n.d.).

4.1.2 Basic Conditions in Zhongshanmen District

Who is living there?

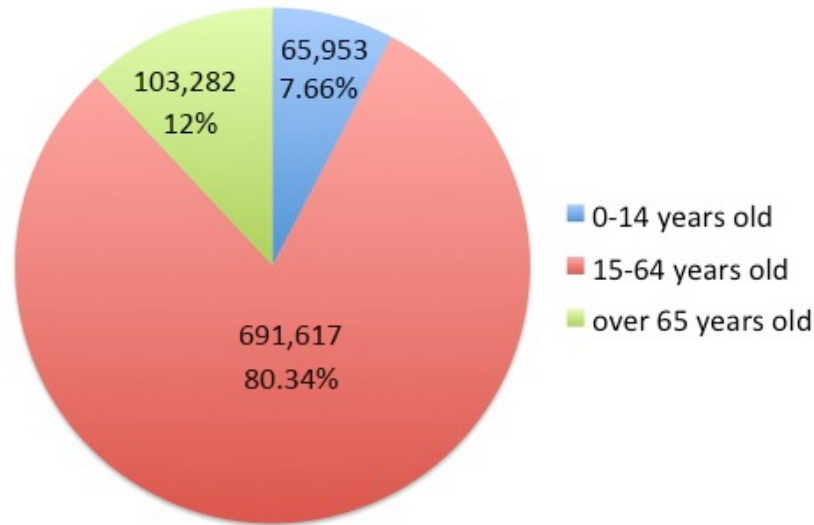


Figure 4.2 Age Distribution of Zhongshanmen District

Zhongshanmen District has over 94,000 population. As the most high-density area of Hedong District, it has 15 communities. According to the sixth country population survey, average family size is 2.62 people. Males represent 50.3% of total population in Zhongshanmen District (The State Council Development Research Center, 2012). The 0 to 14-year-old population is 65,953, representing 7.66% of the total population. The 15 to 64-year-old population is 691,617, representing 80.34% of the total population. The population over 65-years-old is 103,282, representing 12.00% of the total population (Hedong government, 2010).

Zhongshanmen District was developed as a Workers' New Village in 1952, so many residents have lived there for decades as workers. Today, Hedong District's older adults (over 65 years old) represent over 22% of the total population (Ren, 2009). Therefore, the redevelopment solutions should focus on these more than 20,000 seniors.

According to family planning basic national policy, Tianjin government must control total city population below 15,350,000, fertility rate below 9.5%, and natural population growth rate below 3.5% (Tianjin government, 2010). Therefore, the future population in Zhongshanmen District should not sharply increase. This population stability allows planners to accurately predict future needs for shopping, education and transit.

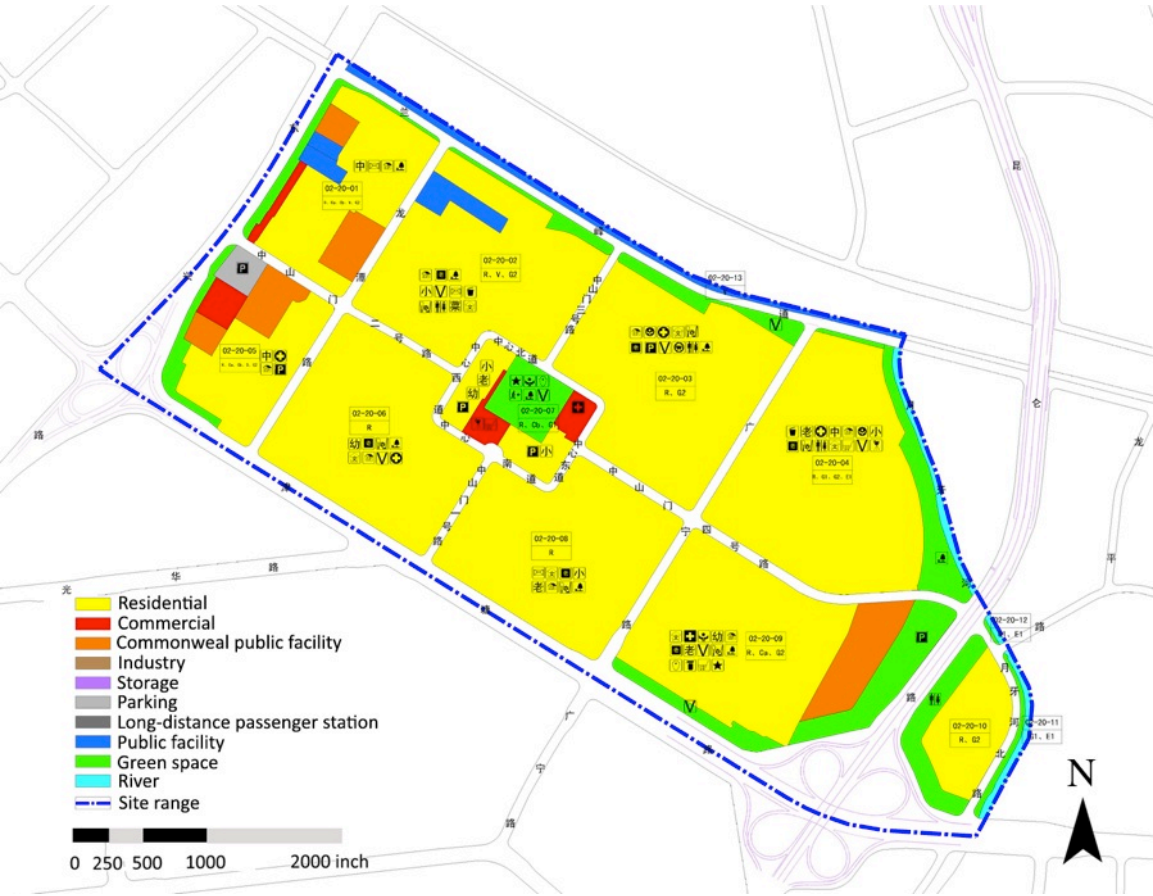


Figure 4.3 Existing Zoning Map of Zhongshanmen District
(Hedong government, 2012)



Figure 4.4 Existing Building Typologies of Zhongshanmen District

Where are residents shopping?

Zhongshanmen District existing business service facilities are distributed in the first floor of mixed-use buildings, including food shops, clothing shops, barbershops, etc. These shops can basically satisfy local residents' needs in each community. A concentrated commercial area is located in the center of the site, around Zhongshanmen Park. A large bazaar is located northeast of the park. However, the east area of Zhongshanmen District contains fewer shops, slightly inconveniencing local residents' lives.

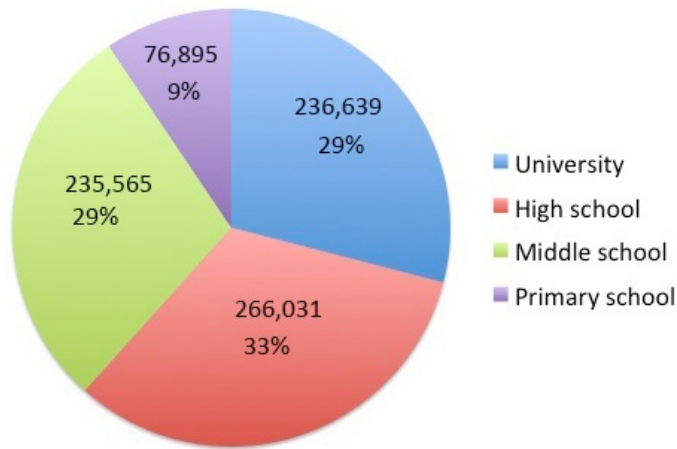
Where are residents studying?

Figure 4.5 Education Attainment of Zhongshanmen District



Figure 4.6 Location of Schools in Zhongshanmen District

In Zhongshanmen District, 13,387 people are illiterate (over 15 years old and cannot read), 76,895 only attended primary school, 235,565 more completed middle school, 266,031 more have graduated from high school, and 236,639 have undergraduate degrees. Most less-educated people are older adults, who grew up before education became widely available. Zhongshanmen District has two kindergartens with over 900 children, four primary schools, five middle/high schools and three colleges (Hedong government, 2010). Therefore, improving education level and promoting school environments are necessary.

What modes of public transit are residents using?

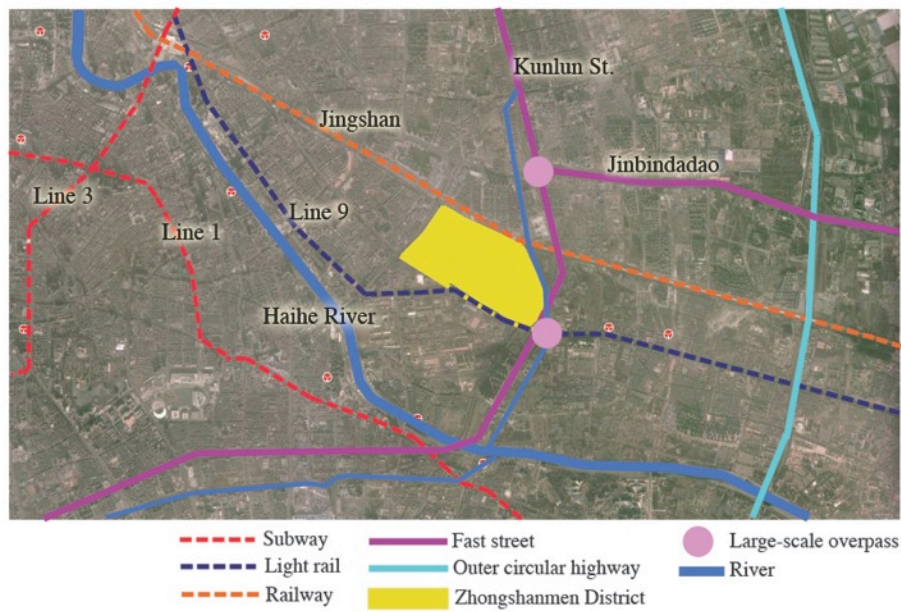


Figure 4.7 Major Transit Routes Around Zhongshanmen District

Different public transit modes are provided around Zhongshanmen District, including subway, light rail and bus services. Buses are the main transit mode of local residents.

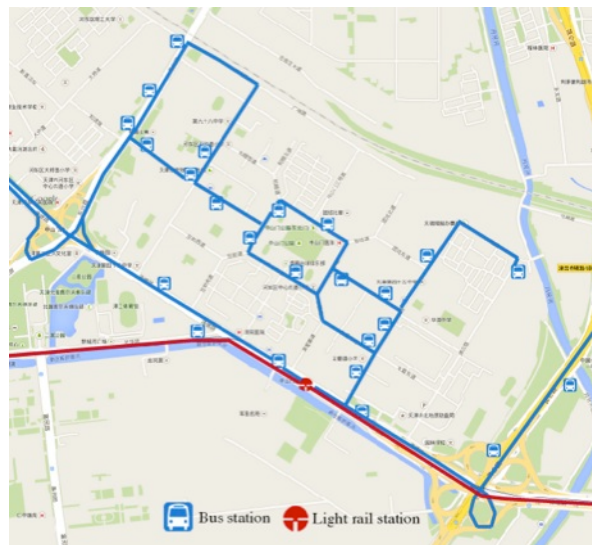


Figure 4.8 Bus Routes and Light Rail Lines in Zhongshanmen District

After Tianjin's first light rail station was built in 2005, Zhongshanmen District became an important transportation hub connecting Tianjin's six districts and Tianjin Economic Technological Development Zone. Today, more people live in Zhongshanmen District because of the convenient transportation. The District Key High School also benefits the prosperity of Zhongshanmen District. For example, ownership housing prices have risen from 2,000 RMB (\$326) per square meter to 15,000 RMB (\$2,448) (Hedong government, n.d.).

4.2 Transportation Conditions in Zhongshanmen District

4.2.1 Transportation Descriptions

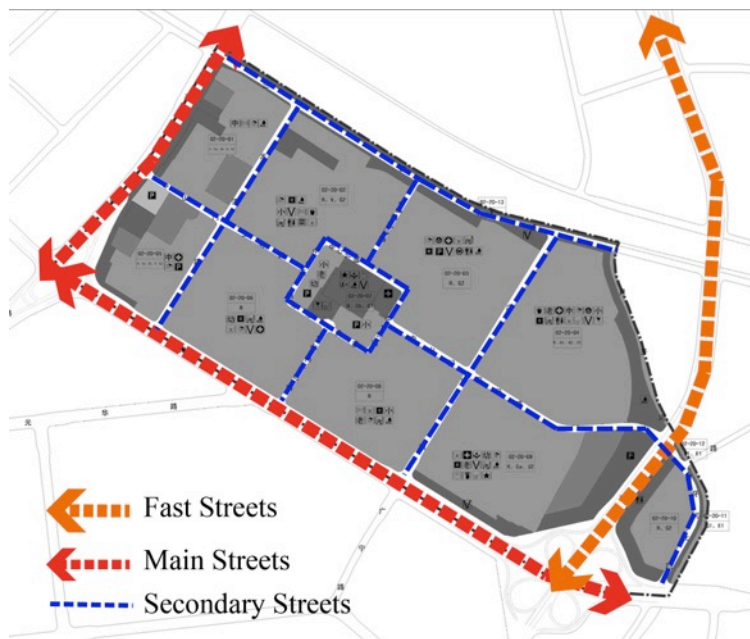


Figure 4.9 Transportation Typologies

The street system in Zhongshanmen District has a grid structure. Following the center point, Zhongshanmen Park, the surrounding streets radiate in four different directions. This district has no bicycle lanes, so motor vehicles and non-motor vehicles share the same streets. Sidewalks have enough width, but some areas are occupied by

roadside vendors. Many streets intersect with Jintang Street, connecting Zhongshanmen District and external areas. The three main cross streets are Huqiu St., Guangning St. and Longtan St.. A secondary street is Zhongshanmen No1. St.. Two slip roads are Youai South St. and Huzhu South St. Huqiu St. has 6 traffic lanes; others have 4 lanes. However, because of on-street parking, those 4-lane streets actually only have 2 traffic lanes. In addition, there is an overpass south of Huqiu St., so motor vehicles from Jintang St. must detour to arrive in Zhongshanmen. Therefore, Guangning St. and Longtan St. become two important entrances of the district. However, schools, hospitals, businesses and other facilities make actual traffic flow much heavier than planned traffic flow. Moreover, streets surrounding the center park are facing the same terrible traffic congestion issues.

According to *Tianjin Master Plan (2005~2020)* and *No. 02-20 Regulatory Detailed Planning of Hedong District, Tianjin* (2004), the following table provides main information about streets in Zhongshanmen District. The total width in column three includes both bicycle and vehicular traffic.

Street Name	Street Type	Total Width (Meter)
Kunlun St.	Fast Street	60
Jintang St.	Main Street	60/90
Dongxing St	Main Street	55~60
Guangning St.	Secondary Street	25
Longtan St.	Secondary Street	25
Lanfeng St.	Secondary Street	20/25
Zhongshanmen No.1 St.	Secondary Street	20

Zhongshanmen No.2 St.	Secondary Street	20/25
Zhongshanmen No.3 St.	Secondary Street	20
Zhongshanmen No.4 St.	Secondary Street	25
Centre North. St.	Secondary Street	20
Centre South St.	Secondary Street	20
Centre West St.	Secondary Street	20
Centre East St.	Secondary Street	20
Yueyahe North St.	Secondary Street	20

Table 4.1 Zhongshanmen District Typologies (Hedong government, 2012)

Among these streets listed in the table, four (shown in red) have serious problems with traffic congestion, and need more attention in the urban redevelopment plan: Guangning St., Zhongshanmen No3. St., Center North. St. and Center South St.

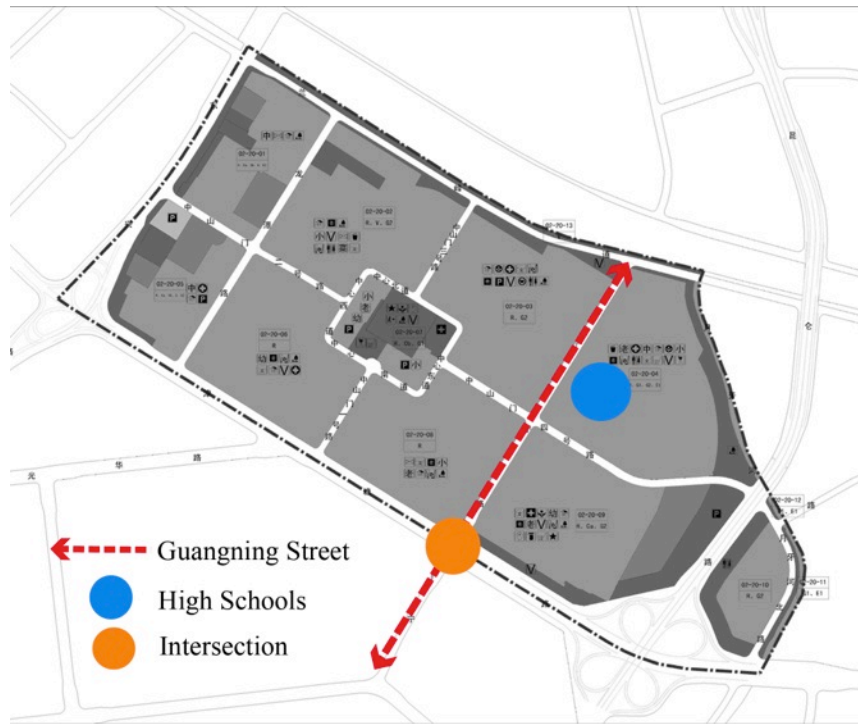
Guangning Street :

Figure 4.10 Location of Guangning Street



Figure 4.11 Parking Along Guangning St.



Figure 4.12 Intersection of Guangning St. and Jintang St.

Guangning Street is 15 meters wide with four traffic lanes. Its surrounding institutions include a hospital (inpatient), a research and design institution (North China Research and Design Institution), a primary school (Youai Primary School), and a high school (No. 45 High School). Guangning Street is one of the most congested streets in Hedong District. It has a busy commercial atmosphere, because of the shops and

restaurants, plus scattered fruit stands and bicycle stands. The concentrated traffic periods are 7:00-8:00am, 11:30am-12:00pm and 4:00pm-5:30pm, when most people go to or back from school or work. Moreover, during 7:00pm-11:00pm, restaurants put tables and cook barbecue outside on the sidewalk, and this habit makes the street conditions worse.

Zhongshanmen No.3 Street:

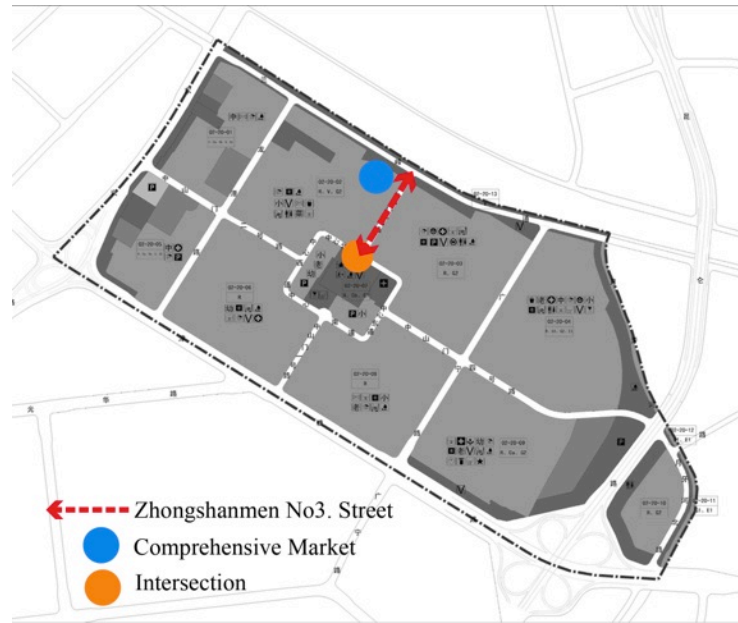


Figure 4.13 Location of Zhongshanmen No3. Street



Figure 4.14 Sidewalk at Zhongshanmen No.3 St. (Bazaar Street) Figure 4.15 Parking Along Middle of Zhongshanmen No.3 St. (Bazaar Street)

Zhongshanmen No.3 Street is 15 meters wide with four traffic lanes. Its north terminal point is a comprehensive market, and the south terminal point is Zhongshanmen Park. The sidewalk near residential houses is 15 meters wide, and street vendors sell fruits and vegetables there. The other sidewalks near mixed-use buildings are 10 meters wide, and goods occupy parts of the sidewalks. Vendors park their trucks or tricycles in the middle of the street like isolation strips, so Zhongshanmen No.3 Street has two narrow lanes. On Saturday and Sunday, the bazaar attracts huge numbers of vendors and residents, so vehicles and bicycles have a difficult time passing.

Centre North Street:

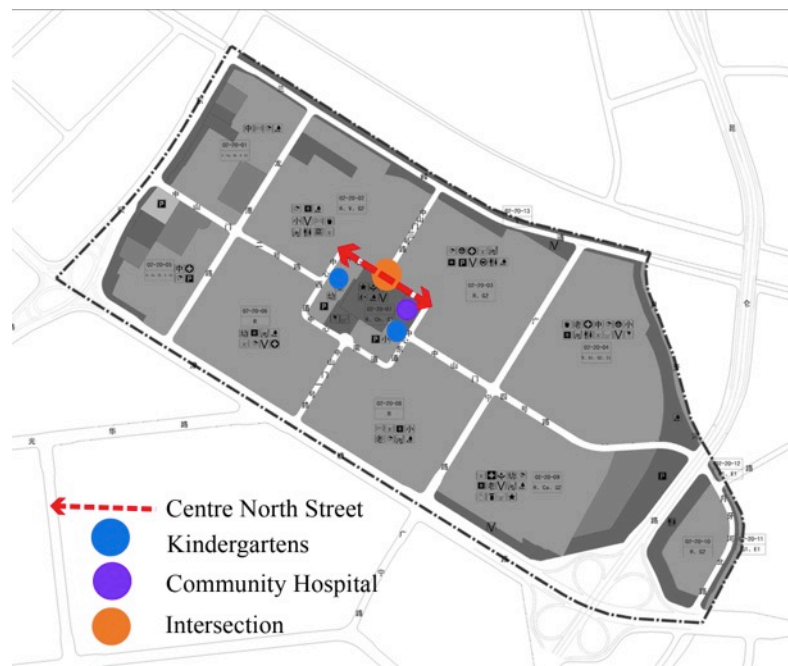


Figure 4.16 Location of Center North Street



Figure 4.17 Zhongshanmen Park's North Entrance

Center North Street is 12 meters wide with four traffic lanes. One sidewalk along the north edge is 8 meters; the other is 4.5 meters. There are many institutions and service areas along this street, including a community hospital, police stations, parks, banks, kindergartens, bus stations and different kinds of shops. Basically, traffic congestion happens throughout most of the day. The north entrance/exit of Zhongshanmen Park is located at the intersection of Center North Street and Zhongshanmen No.3 Street, so alleviating traffic pressure is an important challenge.

Centre South Street:



Figure 4.18 Location of Center South Street



Figure 4.19 Zhongshanmen Park's South Entrance



Figure 4.20 Center South St.'s Traffic Condition

Center South Street is 12 meters wide with four traffic lanes. Two primary schools are located along both ends of Center South Street. In addition, the south entrance/exit of Zhongshanmen Park is along this street. The open space in front of the park attracts many people, plus a medium-sized supermarket and restaurants make traffic worse, causing huge inconvenience for residents.

4.2.2 Transportation Summary

There are many elements impeding traffic surrounding Zhongshanmen Park. Kindergartens are located in both east and west areas. Two primary schools are located in the south area. A community hospital, a social security center, and a police station are located in the north area. These elements plus a middle-sized supermarket and two bus master stations create traffic congestion that seriously influences local residents' lives. Moreover, in Zhongshanmen's original master plan, residential communities' alleys serve cyclists and pedestrians, so there are many bicycle parking areas. With increasing numbers of private cars, there are many cars parking along community alleys and other open spaces.

Hedong government and Tianjin government have used different strategies to

solve traffic issues, such as removing the bus master stations from the park, adding more community health centers, establishing a large indoor bazaar, and increasing bazaars on other streets. However, the traffic issues obviously have not been solved.

This creative project focuses on three main transportation design principles. First, traffic congestion at street intersections must be solved as soon as possible by providing pedestrians a safe walking environment, plus, adding separate bicycle and motor vehicle lanes to reduce traffic conflicts. Second, adding community shuttle service will reduce residents' reliance on personal automobiles. Third, reducing on-street parking will help keep streets clear.

4.3 Open Space Conditions in Zhongshanmen District



Figure 4.21 Location of Open Spaces in Zhongshanmen District



Figure 4.22 Site Plan of Zhongshanmen Park
(Hedong, government, n.d.)

Figure 4.21 shows the location of open spaces in Zhongshanmen District. The largest open space is Zhongshanmen Park with 24,000 square meters, but individual communities lack enough open space. The following descriptions will focus on this issue (Hedong government, n.d.).

4.3.1 Site Conditions of Zhongshanmen Park



Figure 4.23 Activity Area in Zhongshanmen Park
(Zhulong, 2011)



Figure 4.24 Waterfront Area in Zhongshanmen Park
(Zhulong, 2010)

Zhongshanmen Park is located in the middle of Zhongshanmen District. By 2010, the park suffered from ambiguous function areas and incomplete landscape, so the government redeveloped it to provide a better community space and good environment. Zhongshanmen Park has three function areas: characteristic scenic area, activity area and rest area. The characteristic scenic area includes Zhongshanmen museum, exhibiting living scenes and traditional courtyards from the past. The activity area provides fitness equipment for adults and recreation facilities for children. The rest area has wood and stone paving with abundant vegetation. Today, Zhongshanmen Park is a good place to hang out for local residents, especially older adults. Many seniors like to do exercises there, such as practicing Tai Chi, singing Peking opera, playing ping-pong, playing chess, dancing and other entertainment activities. Zhongshanmen Park is a successful public open space to communicate with other residents (Zhulong, 2011).



Figure 4.25 North Entrance/Exit of Zhongshanmen Park (1)



Figure 4.26 North Entrance/Exit of Zhongshanmen Park (2)

The main issue facing Zhongshanmen Park is heavy congestion outside its North and South entrances/exits. Vendor stalls occupy parts of open spaces outside the park, negatively impacting the traffic conditions. Moreover, the park entrances/exits are poorly marked and difficult to find.

4.3.2 Site Conditions of Neighborhood Open Space



Figure 4.27 Neighborhood Open Spaces (1)



Figure 4.28 Neighborhood Open Spaces (2)

The landscape conditions of neighborhood open spaces must be expanded and improved. Figures 4.27 and 4.28 show dead grass. Tianjin is a saline-alkali soil city, but the environment department plants much non-native vegetation and trees to create beautiful styles. Non-native vegetation attracts insects and costs expensive maintenance,

so selecting alkali-resistant plants and trees is important, such as Chinese Rose and *Fraxinus*. Community landscapes are always overlooked, so many plants and flowers die easily. In addition, some fitness areas are located in different communities, but their facilities are poorly maintained and have lost their attraction.

4.3.3 Neighborhood Traditions

Decades ago, the main residential housing type in China was small connecting bungalows with shared public restrooms (Hutong). Small living spaces made Chinese people spend more time outside and have more communication between neighbors. Today, many people move to middle-rise or high-rise buildings during city redevelopment, but many older residents cherish the memory of communicating with neighbors. Zhongshanmen Park provides a public communication area for those seniors, and this is the main reason it is popular.



Figure 4.29 Extra makeshift rooms



Figure 4.30 Extra makeshift rooms

In the last century, many families fed chickens or planted vegetables and flowers in their courtyards or alleys, and these practices have been kept until now. Therefore, many senior residents occupy green spaces to feed chickens in Zhongshanmen District, but those stocking chickens contaminate grass and alleys. Moreover, some residents

occupy open spaces and build extra makeshift rooms out of scrap materials, obstructing passages and causing safety hazards.

4.3.4 Open Space Summary

Considering residents' traditional lifestyles, this creative project focuses on three open space objectives. First, the design creates more open spaces by tearing down makeshift small buildings and extra rooms to design more neighborhood open spaces with activities to attract local residents to communicate in their communities, thus reducing congestion in Zhongshanmen Park. Second, the design moves street vendors into Zhongshanmen Park to keep open entrances/exits and to add a business area for children. Third, the project redevelops North and South entrances/exits more obviously with abundant paving and beautiful vegetation.

4.4 Sustainable Conditions in Zhongshanmen District

The sustainable conditions in Zhongshanmen District should focus on three aspects: sustainable housing strategies, landscape and Zhongshanmen historical culture.

4.4.1 Sustainable Housing Strategies



Figure 4.31 Stormwater Collection System (1) Figure 4.32 Stormwater Collection System (2)

Over recent decades, Tianjin has experienced increasing water shortages. In 2009, Hedong government installed stormwater collection systems in some three-story original buildings, so that rain will drop from roofs into a 2m³ plastic container, to be used for landscape. However, in recent years, the amount of rainfall has been limited in Tianjin, so this sustainable measure is useless (Hedong government. N.d.).



Figure 4.33 Geothermal Managed Building



Figure 4.34 PV Roofs

Some communities are using other sustainable strategies. A community in Longtan Street uses many measures to save energy, such as using new wall materials and structures to preserve heat, and using PVC to replace cast iron for drainage systems. Tuanjiebeili community uses geothermal wells for heating to reduce coal combustion and emissions (See Figure 4.33). However, the heating temperature is insufficient, and cannot adjust temperature like traditional boilers. Some housing in Zhongshanmennanli Community has installed roof-top solar water heaters, to provide hot water for showers and other uses (See Figure 4.34). However, these roofs are not universal because solar heaters are less effective than traditional water heaters (Hedong government, n.d.).

4.4.2 Landscape Conditions



Figure 4.35 Street Trees Along Roads



Figure 4.36 Landscape Conditions in a Community

Many street trees along roads are saplings, and have not yet developed sunshade function (Figure 4.35). It is also important to redevelop more green spaces in communities, which focus on gateways, street nodes, and open spaces in each community. Considering Zhongshanmen District is a high population density residential area, using small spaces to create abundant pocket parks is a good way to improve the living environment. More landscape can beautify communities, reduce air pollution, adjust temperature and decrease traffic noise. Tianjin is a less rainfall city; therefore, planting low shrubs and more grass can save water. Moreover, it is necessary to establish environmental management systems, such as adding more staff to check plants' growth condition, and timely treating or reseedling the plants.

In addition, not having garbage classification to separate recyclable materials is a problem in Zhongshanmen District. There is also no classification for food waste, so no one uses composting. The population in Zhongshanmen District is huge, and many residents drop litter carelessly. Sanitation services are insufficient and must be improved.

4.4.3 Zhongshanmen Historical Culture



Figure 4.37 Zhongshanmen Museum



Figure 4.38 Work Sculpture Outside in Zhongshanmen Museum

Zhongshanmen Museum is located in Zhongshanmen Park. It displays many historical photographs and living scenes from the last century. Establishing Zhongshanmen Museum caused a huge sensation among local residents, especially seniors. Many local seniors spent their youth working for China's industrial construction. Exhibits in Zhongshanmen Museum reflect those memories of the city's good progress. However, this small museum is not enough to show the whole historical change process from 1952. History must be remembered and promoted. As the first Workers' New Village in Tianjin, Zhongshanmen District should have more space to describe details about city redevelopment. Moreover, Zhongshanmen Museum has limited open time, so many residents have less opportunity to visit (Hedong government, n.d.).



Figure 4.39 Zhongshanmen Museum (chunlait, 2010)



Figure 4.40 Zhongshanmen Museum (chunlait,2010)

4.4.4 Sustainability Summary

This creative project focuses on four objectives about sustainability. Using effective housing strategies will save energy, and protect environment. Completing communities' landscapes and adding garbage classification will encourage local residents to separate waste from recycling, and create compost for small family gardens. Adding a larger museum near Zhongshanmen Park to record more history of the district and increasing display time will attract more visitors, and allow local seniors to do regular lectures for local residents, describing past living conditions. This activity will enrich older adults' lives, provide a study opportunity for the younger adults and children, but also promote relationships and increase communication between neighbors.

Chapter 5 Site Design

5.0 SITE DESIGN

5.1 Introduction

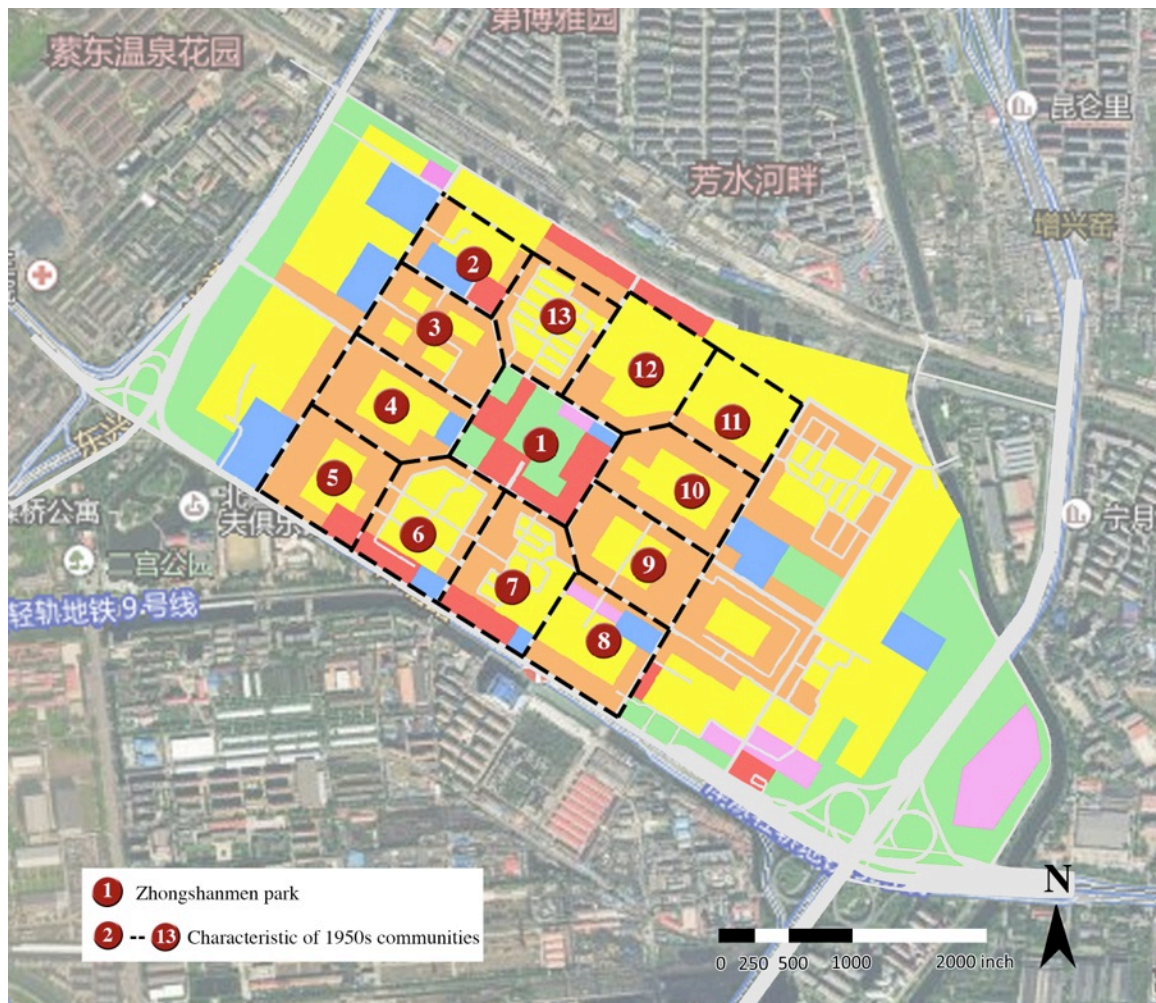


Figure 5.1 Communities in Zhongshanmen District

The following site design transforms the mono-centered Zhongshanmen District into a poly-centric district to disperse traffic, balance distribution of services, and develop smaller, more walkable neighborhoods. The site design achieves this by applying findings from the literature review, case studies and site analysis.

This chapter provides analysis graphics to illustrate different strategies to redevelop Zhongshanmen District. The basic goal of this design is to transform

Zhongshanmen District into a livable green residential area, but avoid large-scale demolition and construction. This design focuses on communities 2-13 to holistically analyse transportation, land use and open space strategies, then furnishes a detailed plan for redeveloping two communities (12 and 13).

5.2 Master Plan for Zhongshanmen District

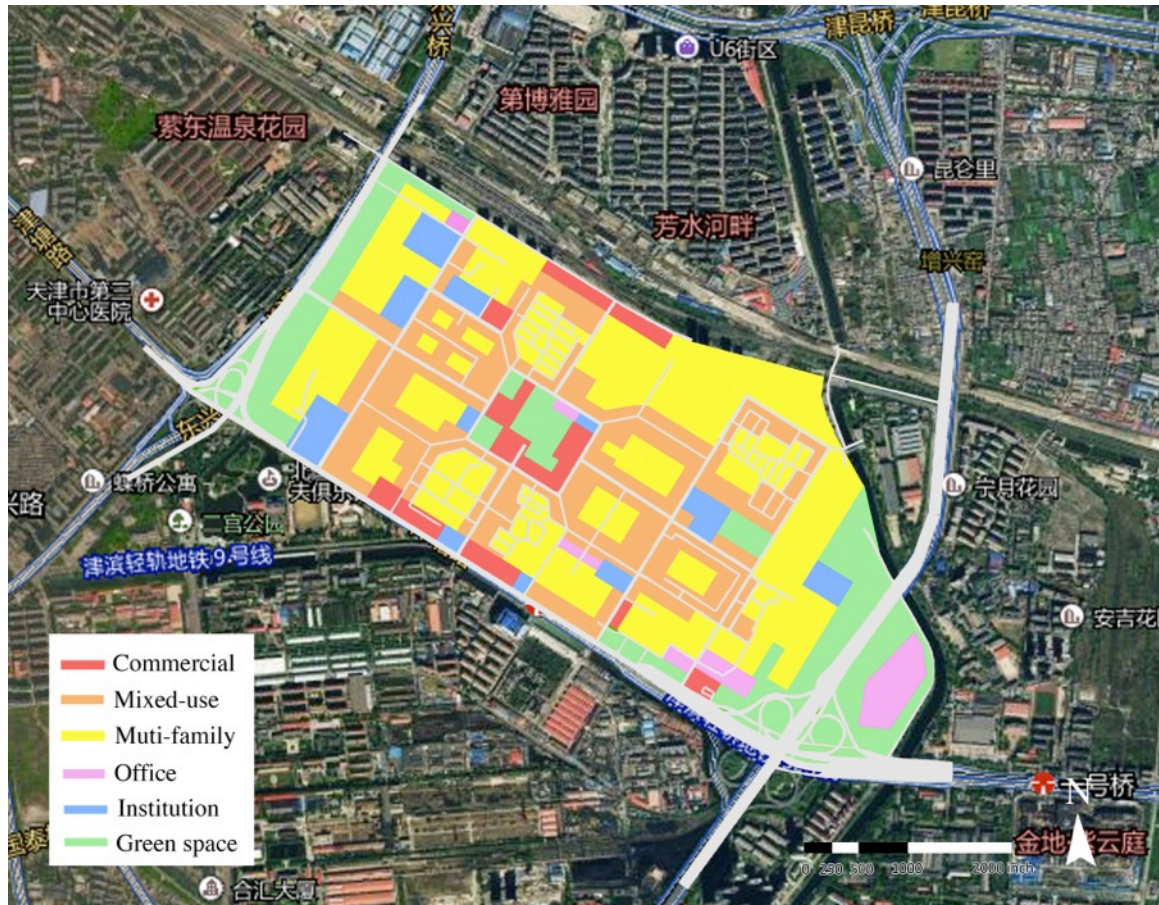


Figure 5.2 Proposed land use for Zhongshanmen District

Goal: To transform the mono-centered district to a poly-centric district

Objectives:

- Disperse traffic
- Balance distribution of services
- Focus on developing smaller walkable neighborhoods

5.2.1 Strategies for Balancing Distribution of Services



Figure 5.3 Proposed Building Typologies for Zhongshanmen District

- Relocating primary schools and kindergartens currently around Zhongshanmen Park to surrounding communities to disperse traffic (See Figure 5.3)
- Adding more health centers in each community to serve local seniors (Figure 5.4)
- Building a larger museum near Zhongshanmen Park to record the redevelopment process of Zhongshanmen District and organize community cultural activities

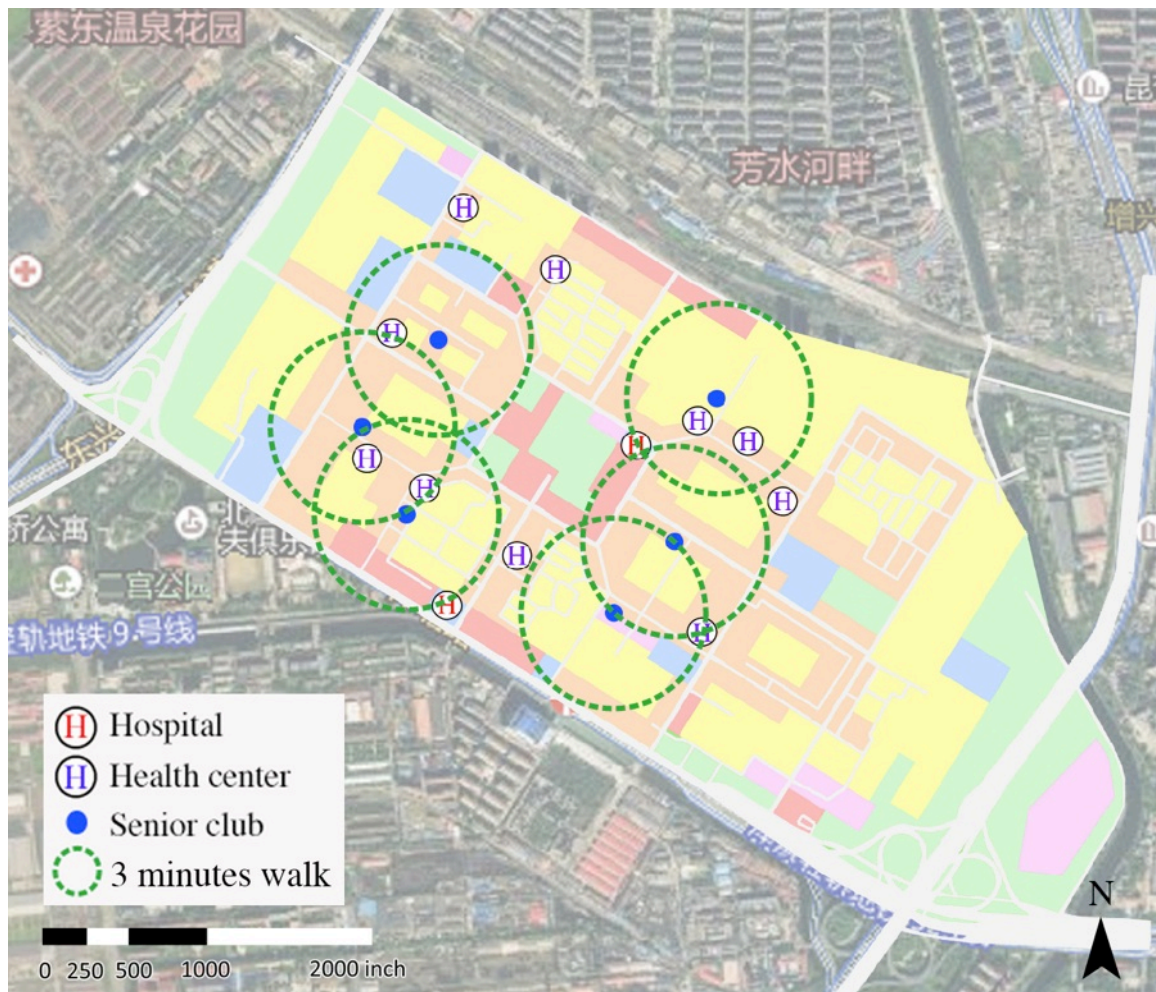


Figure 5.4 Proposed Services for Seniors in Zhongshanmen District

5.2.2 Strategies for Dispersing Traffic

- Restricting long-term on-street parking to reduce traffic congestion
- Creating a community shuttle system to provide more transit options for local residents (See Figure 5.5)
- Limiting traffic on streets around schools during busy times to avoid accidents (See Figure 5.6)
- Adding bicycle lanes to provide safer street conditions for cyclists (See Figure 5.6)

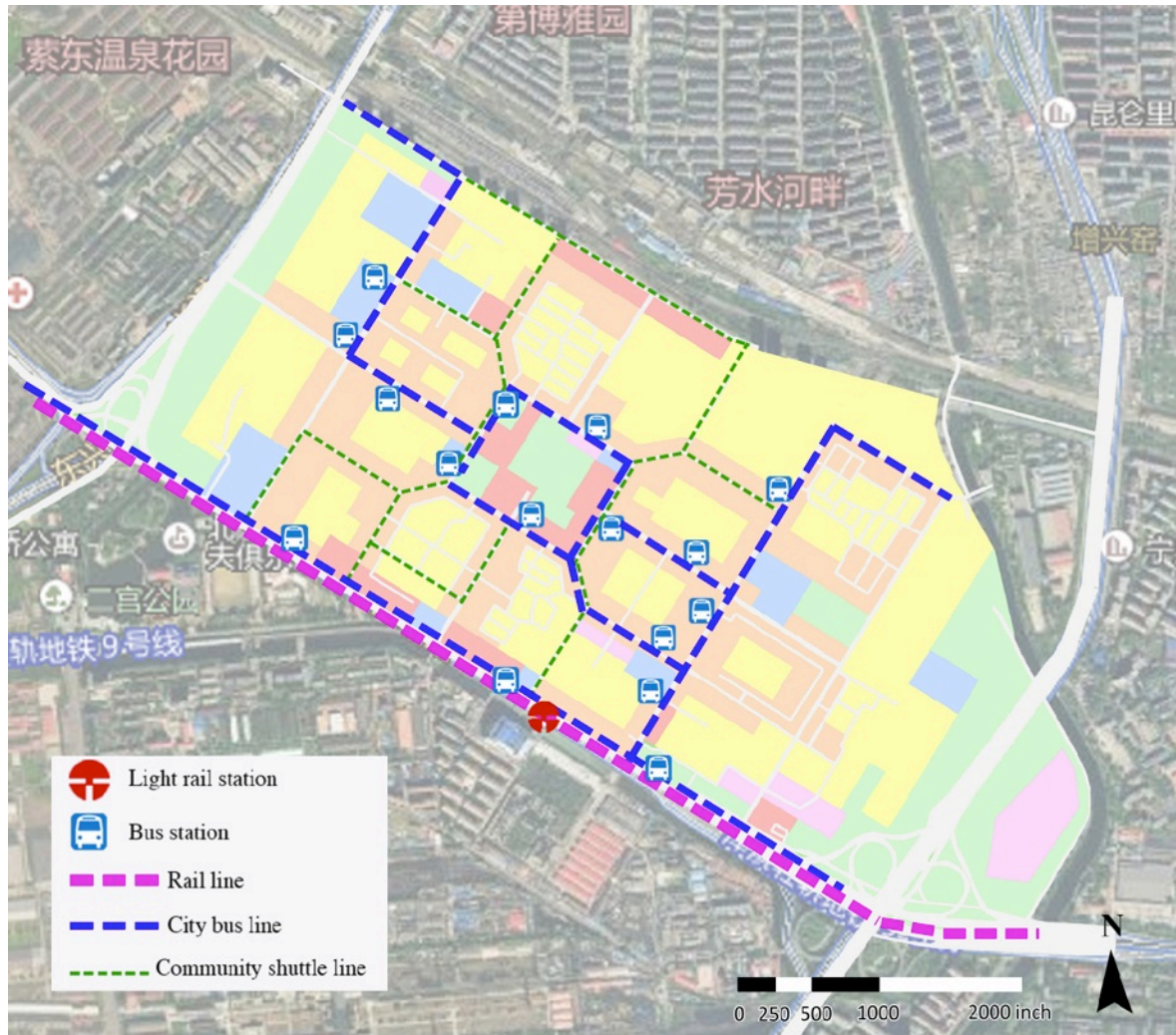


Figure 5.5 Proposed Public Transit in Zhongshanmen District

- Limiting the number of street tables which occupy sidewalks
- Making the bazaar street pedestrian-only (Except for vendors' vehicles)

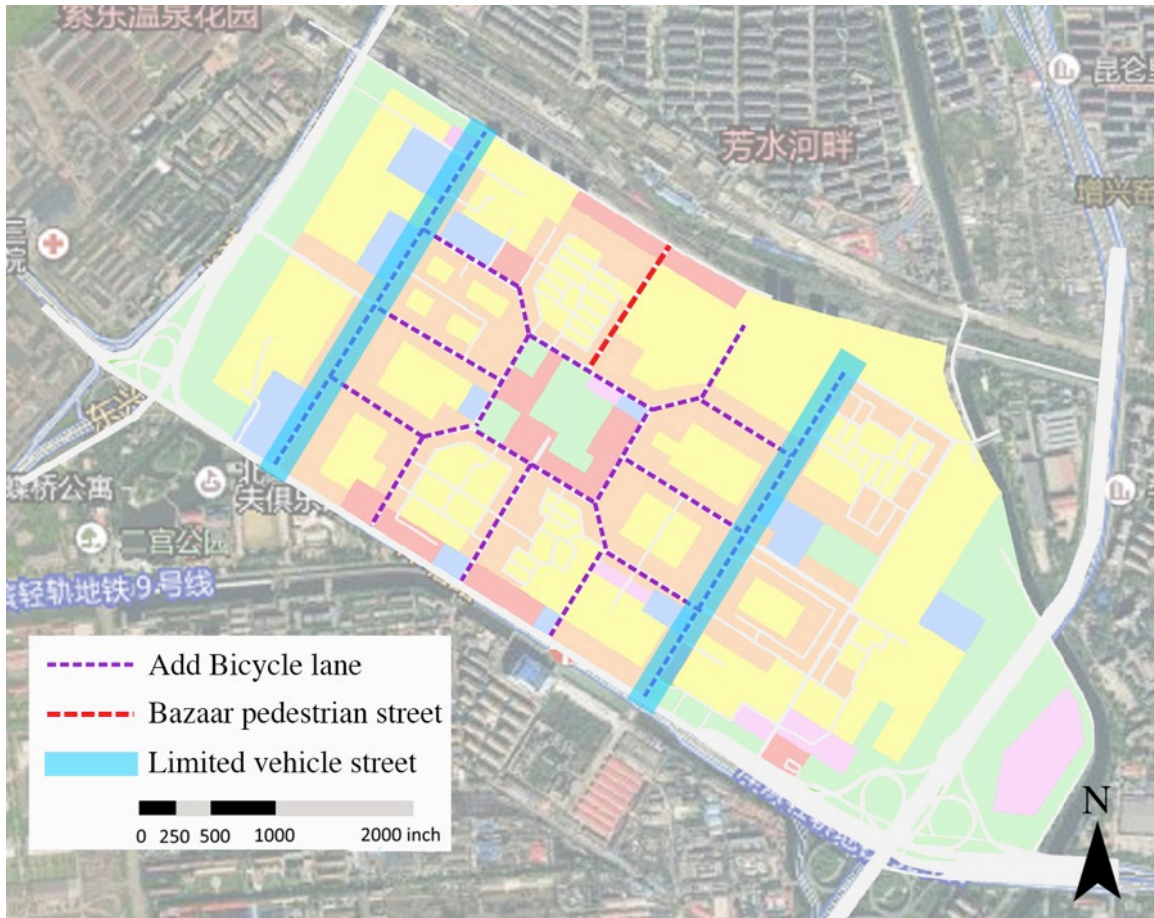


Figure 5.6 Proposed Street Use Changes in Zhongshanmen District

5.2.3 Strategies for Developing Smaller Walkable Neighborhoods

- Making sure each neighborhood has convenient public transit, health center and nearby schools
- Avoiding constructing new buildings in communities to keep enough open spaces, especially in historical communities (See Figure 5.7)

- Tearing down illegal, makeshift extra buildings and rooms to expand public spaces
 - Maintaining and repairing original housing style and residential streets in historical communities
 - Doubling total amount of open space by creating smaller neighborhood parks
- (See Figure 5.7)



Figure 5.7 Proposed Open Space for Zhongshanmen District

Types	Users	Activities
Community park	Local residents	Exercises, dancing, playing chess
Neighborhood park	Neighbors	Walk the dog, planting vegetables and flowers in individual area
Pocket park	Local residents	Exercises, rest, chat
Commons	Pedestrians	Take a walk, running
Courtyards	Neighbors	Playing chess and poker

Table 5.1 Types, Users and Activities for Open Space

5.3 Detail Plans for Two Communities

The following detail plans provide more strategies to design livable green neighborhoods.

5.3.1 Introduction



Figure 5.8 Proposed Site Plan for 12 (Tuanjiebeili) and 13 (Hemubeili)

Zhongshanmen District has 20 living areas, 13 of them historical. The following detail plans provide a series of analysis graphics exploring two historical communities: Hemubeili and Tuanjiebeili Community (See Figure 5.1). These redevelopment design

strategies focus on transportation, open space, landscape and community infrastructures.

Each aspect has one goal and a few strategies.

5.3.2 Transportation Strategies

Goal: To improve safety and circulation along residential streets

Strategies:

- Reducing communities' entrances and exits to strengthen safety plus preserve neighborhood identity and privacy (Figure 5.9)
- Forbidding long-term on-street parking, and permitting temporary parking to avoid traffic congestion
- Enhancing transportation management to reduce external cars entering neighborhoods, such as taxis
- Improving bicycle parking to avoid random parking (Figures 5.10 and 5.11)
- Maintaining access for fire engines and other emergency vehicles

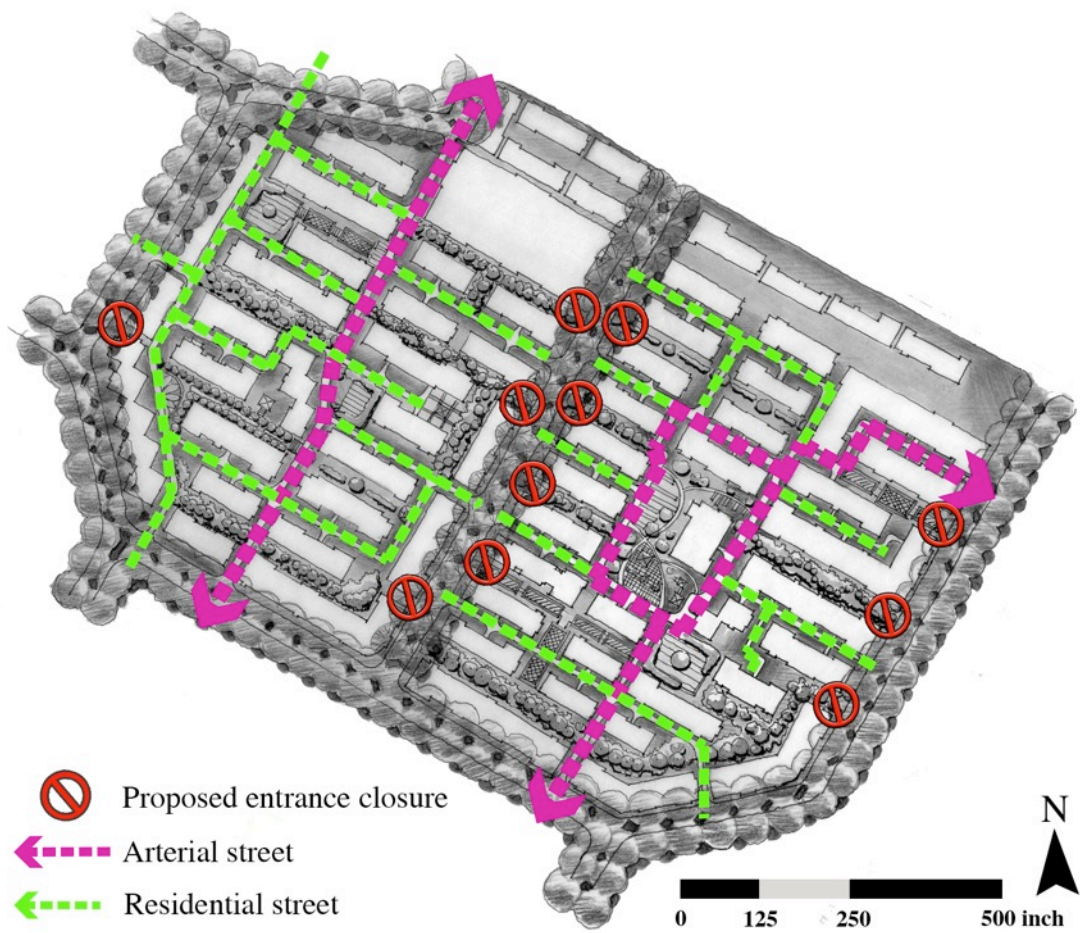


Figure 5.9 Proposed Street Types in Communities

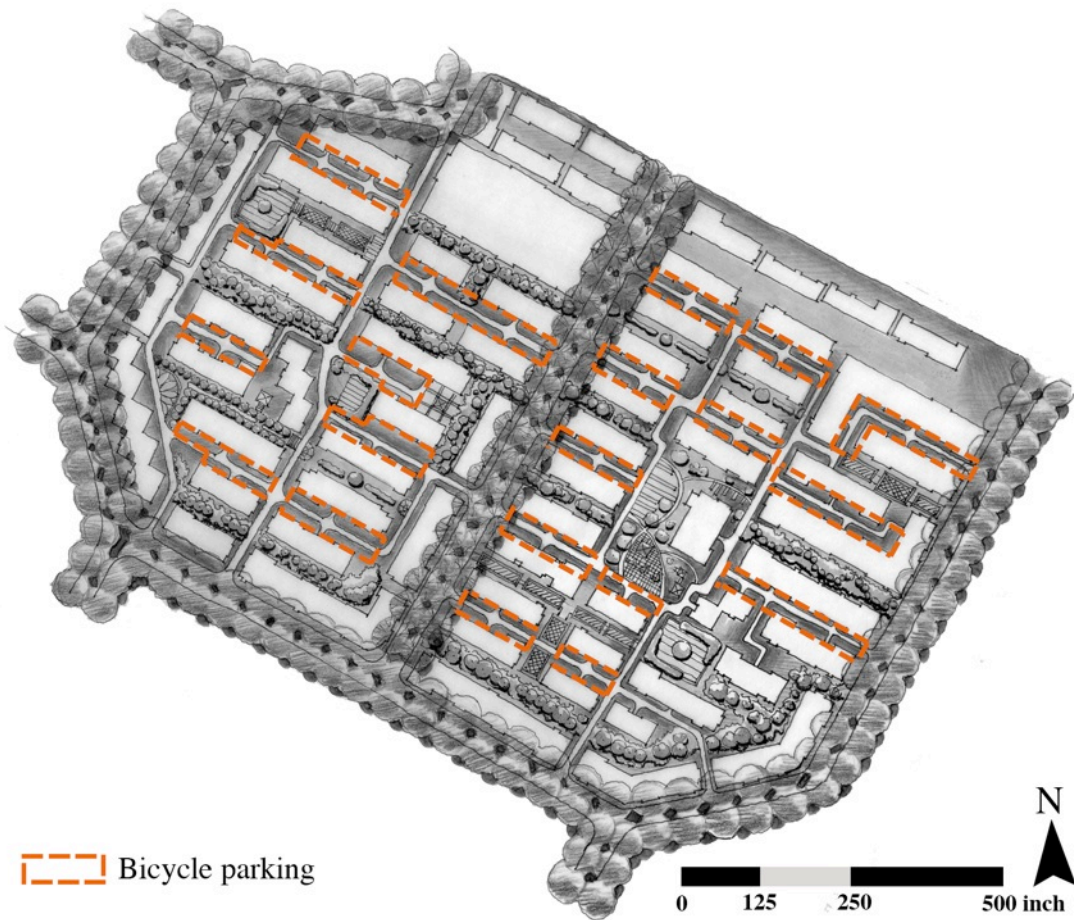


Figure 5.10 Proposed Bicycle Parking Locations in Hemubeili and Tuanjiebeili



Figure 5.11 Proposed Community Bicycle Facilities (Hujiayuan, 2010)

5.3.3 Open Space Strategies

Goal: To create more open spaces to promote communication among neighbors

Strategies:

- Tearing down illegally built extra structures which occupy public spaces
- Redesigning the public space in Tuanjiebeili Community center to provide an open space for socialization
- Creating pocket gardens in small open spaces
- Maintaining quiet communities by not designing elaborate public entrance plazas
- Enhancing landscape and streets to create groups of buildings and promote a sense of belonging

5.3.4 Landscape Strategies

Goal: To improve communities' landscape conditions

Strategies:

- Renting gardens between buildings to individuals and collecting landscape management fees (Figure 5.12)
- Adding water-permeable bricks and steps in lawn areas to avoid treading on grass (Figure 5.13)
- Adding greenways between mixed-use and residential buildings to buffer noise (Figure 5.12)
- Planting big deciduous street trees to shade the street areas
- Using native vegetation whenever possible

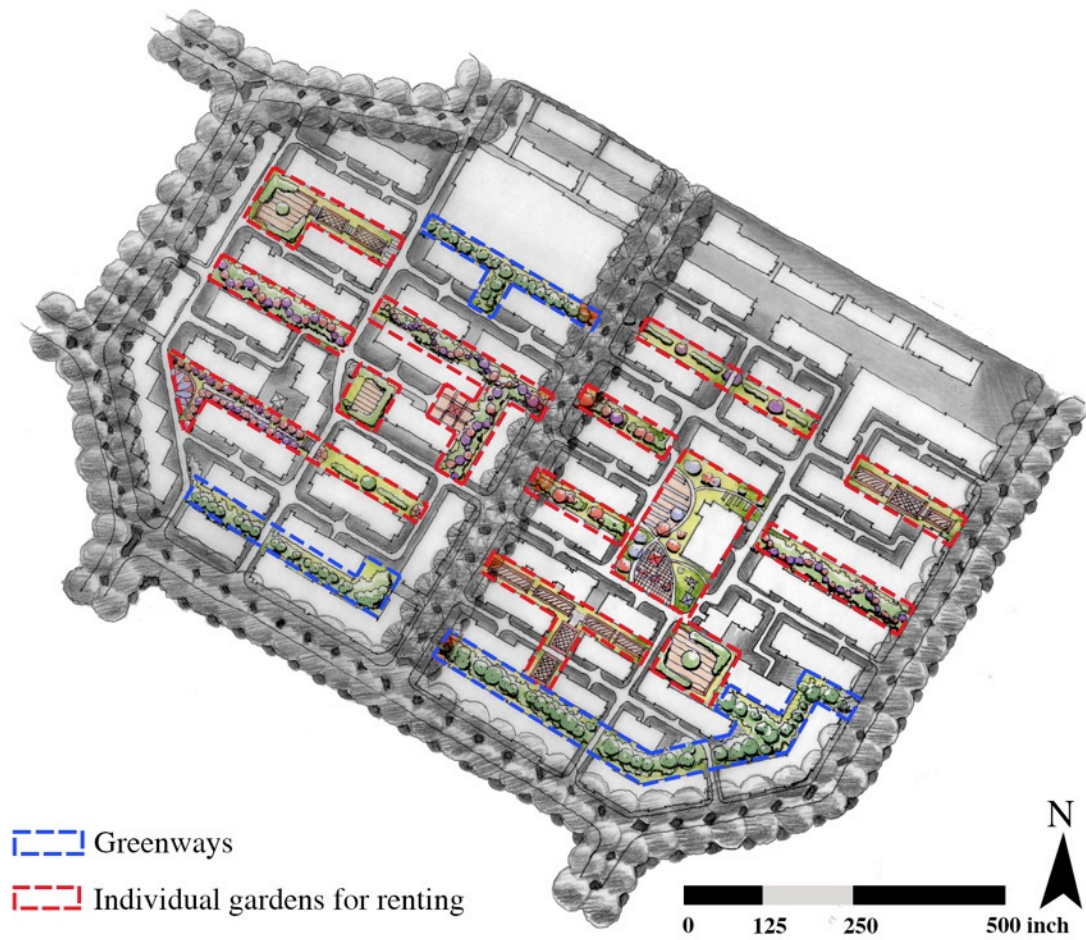


Figure 5.12 Proposed Individual Gardens and Greenways in Communities



Figure 5.13 Proposed Paving and Steps

5.3.5 Community Infrastructure Strategies

Goal: To adding community infrastructure and improve safety around living areas

Strategies:

- Adding solar and LED lighting to save energy and improve street safety (Figure 5.15)
- Adding sprinkling and trickle irrigation for the landscape to save water
- Improving sewage and drainage to manage stormwater in summer
- Classifying trash to promote recycling, including battery, waste and organic trash (Figure 5.14)
- Adding pet toilets to avoid pets polluting streets and landscape (Figure 5.14)
- Adding public furniture to provide convenient service for local residents, including benches, community maps, community landmarks and news columns



Figure 5.14 Proposed Trash and Pet Toilets in Open Space (Hujiayuan, 2010)



Figure 5.15 Proposed Lighting and Sewage Facility in Communities (Hujiayuan, 2010)

5.4 Summary

In site design, all aspects are interconnected, so only addressing a single element is not enough to solve urban issues. Therefore, planners should sufficiently understand the whole site and conduct surveys to identify different design elements for redevelopment.

Chapter 6. Conclusion

6.0 CONCLUSION

6.1 Lessons Learned

The author learned many important lessons about urban planning strategies during the creative project.

6.1.1 Transportation

In China, government plays the most important role in transportation, including designing efficient traffic plans and funding part of public facilities. Merely widening streets will not reduce traffic pressure, because more lanes will just encourage more people to drive private cars. Therefore, we must explore other strategies. Considering pedestrian, bicyclist and motorist travel habits and needs, Tianjin government and Hedong government must develop more detailed principles and provide a variety of travel choices to reduce traffic congestion.

First, providing a safe walking environment for older adults and children is vital. Second, most students commute to school by bicycle, so setting speed limits around schools is critical. Another strategy is to avoid concentrating many public facilities in one area, such as politics, health, education, and leisure buildings. Third, government must limit citizens buying cars to control increasing traffic, and limit existing private car dependence by using license plate numbers to restrict daily driving. Moreover, reducing car speeds helps control traffic noise and air pollution. For some busy areas, such as parks, supermarkets and bazaars, pedestrians should have the priority to cross streets.

In addition, for some historically high-population-density residential districts with many low-income older adults, the government should limit on-street parking to keep

roads unobstructed. Tianjin is beginning to limit car use with temporary results; however, revising city and regional plans can fundamentally solve the traffic issue.

6.1.2 Open Space

To improve and expand public open spaces, first, the government should educate local residents to cherish public facilities. Public green spaces should be timely managed. Considering local residents' living habits, it is possible to increase use of green space by creating public pocket gardens. Second, Urban Management Departments must forbid commercial outdoor barbecues, which currently occupy sidewalk areas, obstructing roads, polluting air and worsening haze. Instead, to accommodate barbecues, the government should plan an open space for these businesses, concentrating emissions and treating the polluted air. Third, Waste Management Departments should improve trash facilities, and strengthen waste management around restaurants, especially to control odors, sewage and food waste. Fourth, landscape departments should build new green spaces and avoid planting big trees and non-native vegetation, which cannot survive in Tianjin's urban conditions.

6.1.3 Sustainability

For old residential districts, repairing or installing sewage systems and insulated windows would be more practical than other expensive technology strategies, such as solar roofs and green roofs. Therefore, a variety of aspects should be addressed during redevelopment progress. In addition, charging for parking would further reduce cars and generate revenue for public open spaces. Community departments also can rent private pocket gardens to individuals; this would satisfy older adults' lifestyles, but also save public resources to manage open spaces.

6.2 Recommendations

This creative project revealed the need for policy changes in Zhongshanmen District. These are outlined below.

6.2.1 Strengthen the Role of Government

The city government should exercise administrative authority and decision-making power to create livable districts and establish planning principles, such as transportation design. These must have foresight, based on the master plan. Governments should treat transportation redevelopment with caution first, not just focus on increasing land income. Considering local traffic conditions, the government should limit traffic during busy times for some congested streets. Moreover, governments and different departments should also improve open spaces and landscape conditions.

6.2.2 Adjust Population Distribution

It is not suitable to build high-rise buildings surrounding old residential districts. The existing street network cannot afford new traffic volume. Therefore, Zhongshanmen District should avoid constructing more high-rise buildings in the future.

6.2.3 Encourage Local Residents' Participation

A livable residential area cannot lack local residents' participation, especially for community environment. Cultivating recycling would help separate recyclable materials from organic waste and trash to protect the environment. So environmental departments should promote classifying trash and encourage residents to protect their living areas.

6.3 Future Research

This creative project addresses many planning issues, but more research would be required to implement the proposed design.

6.3.1 Reconsider Parking

The original master plan of Zhongshanmen District only minimally considered problems, so developing long-term plans to solve streets and parking issues is necessary. The government should conduct surveys and increase public participation to collect extensive information, and create effective adjustment strategies.

6.3.2 Learn advanced technology

Designers must explore more case studies from other countries to learn the integration of land uses and transportation planning, especially the strategies during rapid growth of motor vehicles in the United States.

6.3.3 Effective funding

Local government can fight for funds from different city government redevelopment projects. Today, Tianjin government provides funds to support “Beautify Tianjin” projects. This is an opportunity for Hedong government to obtain funds to redevelop Zhongshanmen District’s living environment. Hedong government must create detailed plans to show the short-term and long-term projects. It is important to make sure the limited funds are used on the most essential aspects.

6.3.4 Long-term technology strategies

Some sustainable strategies require expensive materials, such as green alleys and green parking, so these will become economic burdens for governments. Therefore, those strategies should be considered as long-term plans, implemented after several years.

6.4 Summary

With content access to transportation and jobs, Zhongshanmen District has experienced increasing urban expansion in recent years, and requires careful redevelopment. Planning decisions should address the needs of existing residents by reducing traffic, increasing public open spaces and establishing design principles to improve the living environment. Projects like this will ensure that Chinese cities develop effectively to create better, more livable communities for everyone. China is a typical country whose economy has been rapidly expanding over the past decades. This creative project designs an urban redevelopment plan to reconstruct and repair an old traditional community in Tianjin, China. This urban redevelopment project will provide a reference for all high population density Chinese communities.

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